

SOME POINTS IN THE BREEDING BEHAVIOUR  
OF THE COMMON HERON.\*

BY

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THE following is an account of some " co-operative watching " of Herons (*Ardea c. cinerea*) undertaken by members of the Oxford Ornithological Society in the spring of 1923, at a small heronry about six miles from Oxford. Permission to watch was kindly granted by the owner, Mr. Percy Fielding. Some additional notes made in 1924 are also appended.

The heronry stands in a small spinney, the only piece of wood for over a mile in any direction, on the border of a large flat area of grass-land liable to flooding in heavy rain. Several visits were made in January and February ; on none of these were any Herons seen in or near the spinney until February 25th, when three birds were scared up from the heronry. A small bird-watching tent was erected on February 28th, when seven or eight birds were near the nests. A plan of the nests, old or new, was made, and each nest numbered on this.

On March 4th a few birds flew up from the spinney as two watchers approached ; one bird was seen flying over with a large stick in its mouth. No bird, however, returned to the nests during the two hours spent in the tent.

The most interesting fact observed on this date was that a group of seven birds was standing in a field, about fifty yards from the edge of the spinney, and therefore about one hundred yards from the nests, before we arrived. Most of the birds had their heads down on their shoulders, and remained motionless for the five or six minutes we watched them. No signs of ceremonial activity were seen. The whole group flew off in spite of our efforts to enter the wood unobserved.

Further, while one observer was in the tent, the other noted a group of some half-a-dozen birds in a field several hundred yards to the other side of the wood.

March 8th, 1923.—No birds noted in the fields. Two, or three, nests occupied.

March 10th, 1923.—Five, or six, nests occupied.

March 13th, 1923.—Seven nests occupied.

March 15th, 18th and 22nd, 1923.—Seven, or eight, nests occupied.

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It appears that only eight of the twenty-four nests seen (a number of which, however, were only remains of nests) were occupied this season.

I will not attempt to go into great detail, but will merely summarize the points which seem of greatest interest.

At the beginning of occupation, either one or both birds of a pair may be on the nest; but it appears that often, at the outset, the birds simply sit in the branches above the nest. One or two dates may be useful.

*Nest 3.*—March 4th, no birds. 8th, one; (?) two. 10th, the pair; greeting ceremony. 11th, the pair; building. 15th, the pair; no building; greeting ceremony; copulation. 18th and 23rd, only one seen, sitting.

*Nest 7.*—March 4th and 8th, none seen. 10th, one on nest. 11th, the pair; building; ceremonies. 18th, only one seen, sitting.

*Nest 11.*—March 4th, none. 8th, the pair; food- or stick-presentation. 10th, one bird. 11th, the pair; copulation. 15th and 18th, only one, sitting.

It is, of course, dangerous to draw many conclusions from observations taken for sometimes only two or three hours in the day. But it is, I think, clear that there is probably a preliminary period in which the pair simply takes possession of the nest (staking out territory). During this period the birds often sit in the branches near the nest, not on the nest. Next a period of nest-building or rather nest-repairing, followed by oviposition. During these two last periods copulation may occur; it was not observed during the first. Incubation follows; the time from first occupation to beginning of incubation was probably less than fourteen days in nest 3, less than nine in pair 7, less than eleven (or fourteen) in pair 11. In pair 3, at least two days of occupation were seen on which building did not occur or at least was not noted, and at least one day in pair 7. These times, however, represent first approximations only.

#### COURTSHIP CEREMONIES.

The commonest ceremony may be called the mutual greeting ceremony. A very similar ceremony is found in the Louisiana Heron which I have watched in U.S.A. (see Huxley '23, *Proc. Linn. Soc. (Zool.)* 1923). This occurs primarily when one bird of a pair rejoins the other at or near the nest. Typically, both birds adopt the same attitude, with certain minor modifications. The arriving bird stands erect, and raises the neck to its fullest extent. The neck-feathers at

the same time are bristled up (though not so very prominently as in the Louisiana Heron) ; the head is often pointed slightly up as well, while the crest is elevated (the elevation of the crest is never as marked as in the Snowy Egret or Louisiana Heron, but the crest-feathers in the British species are longer). At the same time the wings are flapped and a raucous, excited-sounding call is repeatedly given. The bird on the nest meanwhile does the same, or is content to call and raise the neck and crest without standing up.

In the small U.S.A. Herons mentioned, a similar ceremony was practically universal immediately a bird on the nest was rejoined by its mate after an absence. Here, however, the ceremony sometimes did not occur at all, and sometimes was delayed till a few minutes after arrival. I do not know whether temperature has anything to do with this restriction of the action.

From its probably original function as greeting, this mutual ceremony has become modified for other occasions : 1. For *nest-relief* proper, when the incoming bird soon takes the place of the one upon the nest. 2. In connection with the *presentation of sticks* by one bird which has been searching, to the other which builds them into the nest. 3. As expression of sudden emotion in a pair which have been together on the nest for some time.

1. *Nest-relief*, e.g., nest 3, March 15th.—One bird sitting. The other arrives 12.45 p.m. ; settles on the edge of the nest. The sitting bird rises. Both stand up to full height, stretching their necks up and rather towards each other, beaks pointing up and nearly touching. No wing-flapping occurred, but both gave a hoarse repeated note. They appeared not to be directly facing each other, but only about three-quarters.

This ceased after perhaps a minute. They stood quiet for a little, and then one flew off, the other settled down on to the nest. Presumably a change of sitter had been effected, although the observer could not be sure of the birds' identity. The departure took place nine minutes after the arrival.

It is interesting to note that in the Louisiana Heron, after nest-relief, the relieved bird fetches one or usually several sticks and presents them to the nest-bird, with a modified repetition of the ceremony ; but here nothing of the sort was observed.

In the above case, the relieving bird (assuming that relief had occurred) appears to have been the male. For at 1.50 p.m. the relieved bird returned ; there was croaking by both

simultaneously, but no ceremony; the new arrival settled down; after one to two minutes the other got up, circled once round, settled above the nest, and shortly after copulated. He then sat quiet for three to four minutes, and finally flew off. An almost identical series of events, except that only the male croaked, and that he did not fly round before copulating, occurred in pair 7 (see p. 160).

The presence of a greeting ceremony when the male relieved, its absence when the female relieved, is of interest, since Chapman (1908, *Camps and Cruises of an Ornithologist*, New York, 1908) believes that this is true of the Brown Pelican. I do not think it is true of the Louisiana Heron, however. Another nest-relief without ceremony of any sort was noted in nest 4 on March 11th, but the sexes could not be determined. The short time spent by the male on the nest is also noteworthy. He remained there but sixty-five minutes, whereas the female had been on for at least two hours. This also appears to apply to many species.

2. *Stick-presentation*.—Energetic building was only seen in pairs 3 and 7. In both cases, one bird (presumably the cock) did all the fetching, the other (presumably the hen) all the placing of the twigs. Both presumed males always presented their sticks with a little ceremony, in general similar to the greeting ceremony, which, however, was rather different in the two individuals. Marked individual differences in courtship ceremonies are to be seen in other birds (e.g., Crested Grebe, Huxley, '14; *Proc. Zool. Soc.*, 1914).

In both cases, the stick-bringers robbed adjacent (unoccupied) nests, some ten to fifteen yards from their own. After pulling out a stick—often after a good deal of indecision and sometimes effort—they flew back with it in the beak. No. 7 always approached his nest from a particular quarter, although this meant going beyond it and then turning. Some time before alighting, both "males" began to give excited cries, and to stretch the neck and raise the crest. Their mates also did the same, though to a less extent, apparently starting in response to the stick-bringers' calls. The "male" lit in the branches some way above the nest, and stooped his neck to pass over the stick. In No. 7 this ended the performance; but in No. 3, the stick-bringer, immediately after giving the stick to his mate, reached his neck and head vertically downwards to the full extent, and waggled the head rapidly from side to side, at the same time clapping the bill to make a strange sound (a similar clapping is also made by fairly large young *Ardea cinerea* when still in the nest). Both

“males” would then sit still for a little, and then go off to fetch another stick.

No. 3 fetched six sticks in thirty-one minutes, and then flew off. He clattered his beak every time but one after presenting it. No. 7 fetched eleven sticks in forty-three minutes, and was then scared away. It started to rob nest 11a while No. 3 was robbing nest 5. Soon after 3 departed, however, it changed and made for nest 5, which was nearer to its own nest.

3. *Expression of emotion.*—Nest 3, March 11th. Shortly after the observer's arrival, which scared the birds, first one and then the other return to the vicinity of nest 3 (8.18 a.m.). They sit in the tree, above and to either side of the nest. 8.37, suddenly, *apropos de bottes*, there is an outburst; both flap, one rather more violently, with necks and crests raised, and repeated note. Shortly after, the bird which had flapped more violently goes through the same process but by itself; then quiet. 8.54, another mutual “outburst.” The less “violent” bird settles down on to the nest, the other continues the ceremony alone for a little. Nothing further of interest till 9.15, when the “male” (unfortunately identification with the more or the less violent wing-flapper was not possible) went off and fetched the first of the series of sticks, as mentioned above.

It is worthy of note that the fetching of sticks by 7 (♂) had a different prelude. One bird arrived near the nest about 8.45, and soon settled down on the nest, but standing, not sitting. The other bird of the pair arrived 9.31, and there was a good greeting ceremony; 9.36, both were standing side by side on the nest, and at 9.39 the “male” went off to fetch the first stick.

*Other ceremonies.* In the Louisiana Heron, in addition to the “mutual” greeting ceremony and its modifications, there exists a rarer “unilateral” ceremony in which only one bird, probably but not certainly always the male, performs. This is also true for the British species, although the details are different. This ceremony was only seen on one occasion, nest 4, March 22nd (i.e., late in the series of nesting events; nest 4 had been first seen occupied, by the pair, on March 10th; a nest-relief, without ceremony, had occurred on March 11th). One or possibly both birds had been on the nest, but had later left it. 5.12 p.m., one arrived, followed by the other two minutes later. The second arrival sat in the branches by the nest for a little, then climbed through the branches to the neighbouring nest 5, which was now very small after

the robberies of sticks from it (see above). There it stood, facing its mate, uttering deep groans. Then it rose to its full height, and shot its head and neck vertically full stretch upwards, still uttering booming groans. Suddenly it leaned forward and lay flat down on nest 5, stretching its neck horizontally towards its mate, at the same time giving a sudden clicking note. The neck was shot out with a curious rippling motion. At this, its mate in nest 4 shuffled a little and gave a few croaks. The whole performance—upward stretching followed by lying down and forward pointing of neck with clicking note—was repeated several times, the mate on 4 croaking at each climax (when the other gave the click note). There was a short pause, and then, after two strange gulping notes, the performance was repeated at 5.30; three minutes later, the performing bird began to sway gently and rhythmically from side to side while standing. It then suddenly stretched itself, not flat on the nest, but about at an angle of  $45^{\circ}$ , again giving the click note.

In the absence of other observations, the precise significance of this very remarkable performance is difficult to be sure of. We must, to start with, know much more of the limits of time between which it occurs.

*Copulation.* This was once seen, as mentioned above, immediately after the relief of a male by a female. A very similar occurrence was noted with pair 7 at 4.45 p.m. on March 11th. One bird ( $\text{♂}$ ) had been standing by the nest for at least an hour, rather restless. Another ( $\text{♀}$ ) arrived, and went right on to the nest, the other giving one croak on its mate's arrival, and shortly afterwards copulating with it. After preening a little, the male flew off.

In another pair (nest 19, March 11th), one had come back and settled close to the nest about 8.30. The second arrived 8.58, and there was a good duet of croaks—presumably a typical greeting ceremony, although I could not see the birds clearly to note crest, pose, etc. They stood quietly till 9.30, when, hearing one croak, I looked up and found copulation in progress. After this, the male shortly moved back to where he had been before, in the branches a little above the other. He went off for three minutes soon after, but then came back and stayed for nearly an hour until scared off.

Thus copulation definitely need not follow immediately on any "courtship" ceremony. On one occasion it followed greeting after half an hour; twice it followed immediately on relief of a male by a female; on the fourth occasion when it was seen, previous events were not noted; the male soon after flew off.

*Other points.* Nest 11, March 8th. One bird settled; soon gave a resonant call, upon which the mate arrived with a thick dark object in its bill (apparently not a stick), which it gave to its mate, after a short "duet" of croaks. The nest-bird on this shot its neck horizontally in and out two or three times, and then gave a low croak; it could not be seen how it disposed of the object. The other after a little flew off (i.e., no nest-relief).

This again was only seen once. Possibly feeding of nest-bird by its mate? This, however, has not been seen in other Herons, so far as I am aware.

*Hostility.* When a bird comes too near an occupied nest, the owner thrusts out its neck and beak with a special cry.

*Fighting.* On one occasion (nest 4, March 11th), after one bird ("A") had settled on the nest, two others ("B" and "C") shortly after lit near by. "B" first drove "C" out of the tree, then turned its attention to "A" and drove it off the nest and right away, then settling on the nest itself. Nothing further until it was scared off an hour later. Here we appear to have definite fighting for territory-plus-nest. Two birds had been seen on or by the nest the previous day.

*Miscellaneous.* On April 20th, when several birds had young, their behaviour was much bolder, several even refusing to leave the nest-trees while I was in full sight close by; whereas on March 4th, none returned at all during two hours, even after the observer had entered the tent. (On March 10th they returned after a moderate time; on March 11th, and later, several returned within a few minutes of the observer entering the hide.)

*Enemies.* On both March 15th and 18th, a Magpie was seen carefully examining nest 16. On March 18th two Heron's eggs, apparently eaten by a Magpie or at any rate by some egg-stealing bird, were found on the ground not far away.

*Behaviour after young hatched.* April 24th, 1923 (windy, overcast). Nest 18 (an unused nest) had disappeared, presumably robbed of all its sticks. The young birds were keeping up a constant squawking and bill-clapping.

6.55 p.m., a bird alights on nest 3. In under five seconds its mate flew off. It was difficult to see clearly through the leaves, but I believe there was a short greeting (nest-relief) ceremony. In any case it must have been very poor compared to such ceremonies during incubation.

#### NOTES FROM 1924.

Not only the Otmoor, but also the Wytham heronry was visited.

## (A) WYTHAM.

February 10th.—A party of four Herons were seen standing silently in a river meadow about two miles from the Wytham heronry. They were put up three times by the watcher; each time they simply flew off a few hundred yards and settled again. This recalls the gathering seen near Otmoor on March 4th, 1923.

February 22nd.—Wytham heronry. Thirteen birds on the nests. One tree was climbed, and the nest found to have fresh sticks. When the heronry was approached, all the birds flew off and lit in a river meadow about half a mile away. They remained quite quiet for fifty-five minutes, when two birds flew up, circled over the heronry, found us still there, and returned.

The reaction of the birds to the strong, cold E.N.E. wind was interesting. They all alit head to wind. In the course of fifty minutes all had faced the other way, first one, then another turning round. When facing the wind, the body was sloping at an angle of about  $45^\circ$ ; when facing down wind, the birds held themselves very erect. There was no exception to this.

March 2nd.—No birds seen at the Wytham heronry; one pair noted in the field where the birds lit on February 22nd.

March 12th.—Six nests apparently occupied. Seven birds at the heronry.

## (B) OTMOOR.

February 1st.—No sign of occupation.

February 23rd.—Droppings and feathers under five nests.

One nest with two, another with one dead young one seen.

March 11th.—As on February 23rd.

March 13th.—Six birds came into the wood about 5 p.m. Much noise in trees. No birds there previously.

March 15th.—One bird apparently sitting. Four Herons in the field, one on guard, two resting, and one about one hundred yards off by itself.

From later observations on the young, it appeared that the Wytham birds had started breeding on the average about a week earlier than those on Otmoor. Apparently (see note for February 23rd above) some of the Otmoor birds started breeding too early; the young died, and the next attempt was delayed.

## CONCLUSION.

I think that the above account shows that even a moderate amount of watching can accomplish something during the

little-observed period of a bird's sexual life that takes place before the eggs are laid. It is proposed to continue the work as occasion offers.

The mutual ceremonies of greeting, etc., were to be expected after acquaintance with other Herons; but the unisexual ceremonies are interesting and appear to be more complex than in the Louisiana Heron. All these fall under the head of post-mating ceremonies (see Huxley, '23, for discussion).

No actual pre-mating ceremonies were seen, but the gathering of the birds in small companies in the neighbourhood of the heronry before most of them had occupied nests is of considerable interest.

Mrs. H. Brindley (*née* Miss M. Haviland) informs me that in Ireland towards the end of December she once saw a similar gathering of this same species. The birds were in an irregular circle; and one of them suddenly moved into the centre and executed a few half-hearted steps. Unfortunately they were soon after scared up. This gathering was several miles from any heronry. Miss Haviland was also informed by an old earth-stopper in Ireland, whose first-hand knowledge of natural history was considerable, that he had himself several times seen similar gatherings, and had witnessed regular dancing by the participants.

Such "dances" would be very likely to escape observation, considering the season at which they are held, their occurrence in open country and the wariness of the species. All the more reason, therefore, for ornithologists to keep a sharp look-out for them, particularly as, if they really exist, they are obviously pre-mating ceremonies, of which next to nothing is known even in the commonest species (see, for instance, the remarkable account by Martin in the *Field* for March 15th, 1923, of the great pre-mating gatherings of the Common Partridge).

In any event, these few notes illustrate what I believe to be two general rules—(1) that in species of birds in which both male and female resemble each other in colouring *and* share the duties of incubation and care of young, most of the post-mating "courtship" ceremonies will be mutual. (2) That where such birds breed in colonies or do not conceal their nests, a greeting and nest-relief ceremony will occur and will take place at the nest.

I should like to conclude by thanking my fellow-members of the Oxford Ornithological Society—Messrs. Banks, Colman, Elton, Madden, Montague, Stoney and Tucker—for their help in making these observations.