AGGRESSIVE DISPLAY OF THE OYSTER-CATCHER
(Studied by means of Stuffed Specimens and a Mirror)

BY

GEORGE EDWARDS, ERIC HOSKING AND STUART SMITH.

(Plates 31-40.)

1. METHOD OF STUDY.

For studying the aggressive displays of the Oyster-catcher
(Haematopus ostralegus occidentalis) we used methods similar to
those we employed for the Ringed Plover (Charadrius hiaticula),
which were described in British Birds, Vol. xl, 1947, pp. 12-19.

We found an Oyster-catcher's nest on a shingle strip beside a
Scottish burn, in the Cairngorm country, and erected and moved
into position the necessary hides before starting to work the birds.

As before, two observers were in the tents for close-range
observation and photography, whilst the third was hidden at a
distance for wide-range observation and to be available for
arranging the stuffed bird or mirror.

As with the Ringed Plover, differentiation of the sexes was
based on brilliance of iris, beak, and leg colouration, and general
plumage brightness, and the words cock and hen are thus
used with some reservation. The photographs reproduced are by
Hosking (Figs. 2 to 15 inclusive) and Smith (Figs. 1, 16, 17).

Edwards took a ciné film of part of the display, which helped
considerably in filling in gaps in the recorded notes.

2. EXPERIMENTAL.

(a) The Stuffed Bird on the Ground.

We started to work the pair on May 26th, at 2.0 p.m. The dummy
bird was firmly erected about a yard to the north of the nest, the
wooden base being covered with stones. The hen Oyster-catcher
returned to the nest very soon after we had settled down,
approaching by the usual crouched run. She came to within
about 6 yards of the stuffed bird, stopped suddenly, and tensed
herself. She then called quietly once or twice with a low clucking
note "klock, klock, klock" and then loudly with the typical
call "klee-eep, klee-eep". The cock bird, who was feeding on
the pasture on the other side of the burn, at once flew up and
dropped at her side.

Both birds then approached the dummy with a typical "piping
ceremony". In this, the birds ran forward with lowered heads,
beaks open and pointing more or less vertically downwards, and
wings held with the carpal joint pushed forward, giving the
appearance of "hunched shoulders" (Figs. 1 and 2). The notes
uttered started with the typical "klee-eep, klee-eep", gathered
speed and dropped in pitch, and terminated with a fine prolonged
trill. As far as we could judge, after seeing many such piping
approaches, they differed in no particular from the piping cere­
omies associated with the nuptial display of the Oyster-catcher.
When the birds reached a distance of about a foot from the dummy, the cock stopped and continued the pipe. The hen however, after standing tensely beside the dummy for a moment, rushed at it, and with wings spread thrust her beak up to half its length into the nape of the dummy (Fig. 3). She tore some of the stuffing from inside and tossed it to one side. The attack was then switched to the crown and head of the dummy, though the method was the same; a quick rush with raised wings followed by a violent thrust of the beak into the dummy (Fig. 4). Sometimes the attacking bird seized the dummy by the neck or by the base of its bill and held on tightly without moving for up to 10 seconds at a time. This looked very incongruous, the battered, and by this time limp, dummy contrasting with the tense excited Oyster-catcher, with its red eyes flashing.

There followed another piping approach, and this time the hen seized the dummy's tail and tore it from its body, together with a large wad of cotton wool stuffing (Fig. 5). She then ran to the burn, dropped tail and stuffing into the water, and proceeded to souse her bill and head thoroughly in the stream. There followed a period of bathing, in which the hen was joined by the cock.

During all this time, the cock did no attacking whatever, but interspersed his piping displays with the usual reactions of waders to nervous tension. He bobbed and jerked in the manner of Redshank (*Tringa totanus*), "false-brooded" by crouching in any convenient depression near by, "false-preened", indulged in stone, twig and grass tossing, and, most interesting of all, frequently adopted an attitude which we have termed the "false sleeping" attitude, and which was also such a feature of the posturing before the mirror (*vide* (d) *infra*). In this the bird tucks its beak beneath the scapular feathers, but its whole attitude is one of tension (Fig. 6). The eye is wide open and the body, and especially the legs, tense. We never observed the relaxed stance, with one leg drawn up, which characterizes the true sleeping attitude of many waders. In addition, the cock several times gave "lure displays" of the "injury-feigning" type, creeping away from the dummy with wings dragging and depressed and tail fanned (Fig. 7).

During periods when the hen was not attacking or seemed uncertain what to do next, she also tossed grasses and stones (Fig. 8.) and bobbed and jerked.

The stuffed bird was by now in a desperate state, and reactions to it by both Oyster-catchers were dying down, so much so that the hen came to the eggs to incubate, though she appeared far from easy and ran to the remains of the dummy once or twice for a half-hearted attack.

We now abandoned our experiments for the day, and proceeded to fish feathers and stuffing from the burn and retrieve what we could from among the shingle. Edwards spent the evening in reconstructing the stuffed bird.
The Stuffed Bird Elevated.

Next day, the dummy was nailed by its base to a stout post about 2 feet high, which was firmly erected at the back of the nest. When the hen bird returned to the nest, she walked past the post and went straight to the eggs and started to incubate them. She even went to sleep on the nest. When, however, one of us made a slight noise inside one of the hides, she looked up suddenly and saw the elevated dummy for the first time. As before, her first reaction was an urgent call to the cock ("klee-eep" note) and he immediately joined her. There was a typical piping ceremony, and the hen bird then flew up at the dummy in a series of attacks. In these she flew at the dummy with outstretched head and lowered legs, driving her beak right into the stuffed bird and very soon knocking it completely to one side (Fig. 9). She then continued to attack from below, leaping up with raised wings and tearing at the dummy's breast (Fig. 10). During this time, the cock bird again did no active attacking, but ran round piping and bobbing, and giving another "injury-feigning" display. The dummy was soon in a desperate state again, so we emerged from our hides and collected the remains. Edwards again spent the evening doing repairs.

The Stuffed Bird Suspended.

As a final trial with the dummy, we decided, on the suggestion of Edwards, to try to give it greater "animation" by suspending it from a wire gallows, so that it swung just clear of the ground. This was done, and by an interesting chance, it was the cock Oyster-catcher who returned first to the nest. On seeing the dummy, he called at once "klee-eep, klee-eep", then with a sharp chipping note "kic, kic, kic", but did not pipe or trill and, significantly, made no attack whatever. For three-quarters of an hour he mouched around, calling from time to time, but did not come to the eggs. The hen bird put in no appearance during this period, but then suddenly returned, and at once both birds performed a piping display at the dummy. There was no immediate attack by the hen, but considerable trilling and piping and much stone-tossing.

Finally the hen bird made a series of sharp attacks on the dummy, with wings raised and sometimes rapidly flapped (Fig. 11). As the dummy swung back each time, the hen sprang nervously away with raised wings or stood and regarded the swinging bird from a crouched attitude with a suspicious sideways glance. Attacks duplicated in type those on the grounded dummy, but were more vigorous, and more use was made of elevated wings in them. In several attacks, the bill or neck were seized and held tightly for a time without movement. This seizing and holding of the dummy's beak without movement was a constantly recurring feature of the attacks (Fig. 12).
After ripping the neck-feathers off, the hen ran to the burn and dropped them in, and then proceeded to bathe for about 10 minutes, in which she was joined by the cock bird. On returning, the hen bird made a few desultory attacks on what remained of the stuffed bird and then, as reaction to the dummy diminished, went to the eggs and incubated (Fig. 13).

The dummy being now past repair, we decided to try reactions at a mirror.

(d) Reactions at a Mirror.
A mirror, approximately 2 ft. 6 ins. by 2 ft. in dimensions, was erected in a vertical position near the nest. The hen Oyster-catcher returned and was about to settle on the eggs when she saw her mirror-image. Reaction then followed the same pattern as at the dummy; there was the usual call to the cock and a typical piping approach until the mirror-image disappeared from view at the edge of the mirror. After a moment’s indecision the hen bird made as though to return to the eggs, then, seeing the reappearing image, returned to the mirror. She then started to walk in a tense, stealthy manner along the mirror, intently regarding the image all the time (Fig. 14). From time to time she would stop, face inwards, and deliver a sharp blow at the image, her beak hitting the glass with a loud “thwack” (Fig. 15). When the end of the mirror was reached, the bird would spring around to the back to see where the adversary had gone to (Fig. 16). A frequent attitude at the mirror was the interesting “false-sleeping” posture which is shown in Fig. 17. In assuming this, the bird “froze” as soon as the mirror-image appeared, and immediately tucked its beak into the scapular feathers. The eye remained intently open, and the whole attitude one of considerable nervous tension. During this time we saw little reaction in the cock bird. He kept well behind the mirror and thus could not appreciate the reason for the hen’s reactions. He frequently ran away towards his feeding ground, but returned at once when the hen piped.

(e) Reactions to a Stuffed Stoat, a Stuffed Sandpiper, and a Stuffed Golden Plover.
We had with us a Stoat (Mustela erminea) stuffed in a fearsome attitude in which the fangs were bared and one foot raised. When this was placed near the Oyster-catchers’ nest the birds showed signs of great nervousness, but no tendency to indulge in piping displays or to attack in any way. Reaction took the form of walking slowly round the Stoat at a safe distance of about 4 feet, accompanied by a low-pitched “pic, pic” note. There was some stone-tossing.

We then substituted a stuffed Golden Plover (Pluvialis apricaria) in winter plumage, placing it very close to the nest, at 3 feet distance. Both Oyster-catchers completely disregarded
this bird, even when they were both present at the periods of
nest-relief. Using a stuffed Common Sandpiper (*Actitis
hypoleucos*), also at 3 feet distance, we got evidence that the hen
Oyster-catcher knew that the bird was there, for she would
approach with slightly outstretched neck, but after looking at the
bird for a moment would go straight to the eggs without further
reaction.

3. DISCUSSION.

The displays of the Oyster-catcher, both nuptial and aggressive,
have been studied by a number of workers, and the relevant
literature up to 1925 was collected by Huxley in his paper
“Studies on the Courtship and Sexual Life of Birds, V. The
Oyster-catcher” (*Ibis*, 1925, pp. 868-897), and need not be
reviewed here. Since that time, Dirckson (*Journ. f. Orn.*, 1932,
pp. 439-447, and 452-458) and D. Nethersole-Thompson
(M.S. notes quoted in *The Handbook of British Birds*, Vol. iv,
p. 416) have added to our knowledge of the nuptial display, whilst
K. Williamson has dealt with the aggressive display in “The
Behaviour Pattern of the Western Oyster-catcher in Defence of
Nests and Young” (*Ibis*, 1943, pp. 486-490). In addition, a most
valuable and comprehensive paper has recently appeared which
descibes a study of the Oyster-catcher in Holland by Makkink—
“Contribution to the knowledge of the behaviour of the Oyster-

The reactions we witnessed may conveniently be discussed under
the headings (a) piping ceremony; (b) methods of attack, including
approach and actual blows; (c) the false-sleeping attitude;
(d) substitute activities such as false-brooding, ceremonial bathing,
stone- and twig-throwing, false-preening.

(a) *The Piping Ceremony.*

This is a reaction which is elicited by so many divers situations
that it is difficult to explain in precise psychological terms.
Huxley and Montague (*ibid*) consider that it is a general manifest-
atation of excitement, since it may be performed by a single bird,
or be an expression of hostility of one bird against another, or of
a pair against another pair, or sometimes, when hostility might
be expected, an extra bird is allowed to join in. In the latter case,
social excitement seems to come into play.

Makkink (*ibid*) on the other hand, thinks that piping is a
manifestation of sexual origin. He points out that only adults
pipe, and never juveniles, whilst the piping is confined mainly to
the breeding-season. Piping is not associated immediately with
coiton. He concludes (i) That piping is caused by a special
internal impulse (“the piping impulse”) which is of sexual origin,
but not identical with the impulses of coition and nesting; (ii) That
it is stimulated by external circumstances, viz., the presence or
activity of fellow birds.
Piping is the most important cause of the assembling of Oyster-catchers, and Makkink points out that incubating birds will even leave their eggs to join a piping group.

The piping we witnessed was, of course, always employed as a manifestation of hostility, and this is one of its most common usages.

(b) Methods of attack.

Prior to each attack upon both dummy and "mirror-image", there was a characteristic approach. This we have described above as a tense, stealthy walk, in which the body is attenuated, and the whole attitude one of nervous tension. Makkink describes this attitude, which is always a prelude to hostilities, as the diplomatist attitude because "... they look like diplomats in tail coats who cautiously approach to find out each others' intentions! The tips of the wings are crossed over the rump, the neck stretched out, while the bill points obliquely upwards. The bird then steps slowly round its adversary, in a ridiculous and solemn manner."

As to the actual fighting, Makkink agrees in every particular with our observations. He points out that Oyster-catchers fight with the bill, head on, hacking away at an opponent. "They hew like woodpeckers" he says. The wings are clapped violently. Often the birds seize each other's bills, and whirl round with fluttering wings.

Makkink contrasts this with the method of fighting used by the Avocet (Recurvirostra avosetta), which, having a weak bill, fights with its wings.

The rather remarkable habit of gripping the dummy and holding on finds a counterpart in Makkink's observation, quoted above, that the birds seize each other's bills, and also in Huxley's observations when "... one bird seized another's wing and held on for a considerable time, while dragged round by the bird he had seized."

(c) The "false-sleeping" attitude.

This remarkable attitude must have been witnessed by many observers, but until Makkink's paper, few seem to have recorded it, and those who did failed to recognize its significance. This is most probably due to the fact that the attitude is easily mistaken for genuine sleeping. Huxley no doubt saw it, for he says, "Once a hen Oyster-catcher immediately after copulation was seen to put her head under her wing and dose." Or again, "A pair sleeping (our italics). They wake up and begin a mutual piping performance."

Similarly Coward (Bird and other Nature Problems, London, 1931) describes how Oyster-catchers "will stand for hours within sight of the spot where the young are crouching and even pretend to sleep, tucking their blunt, long, orange-red bills into their scapulars, but keeping an eye open all the time". Whilst
disagreeing with Coward’s interpretation, we must point out that he was the first, as far as we know, to recognize the false-sleeping attitude.

Makkink gives considerable space to the attitude, which he calls the “pseudo-sleeping” attitude (=P.S.A.). This is perhaps a better term than our “false-sleeping”. He considers that the P.S.A. occurs when there is emotional conflict within the bird, and that when the two opposing emotional tensions happen to attain a balanced equilibrium, then the bird adopts the P.S.A. The attitude often occurs just before an attack is launched, and may be adopted by both birds. Hostile birds either attack, or if fear gains the upper hand, one will fly away. Now if neither impulse (attack or fear) is sufficiently strong to make the birds do either, then they withdraw themselves from action by adopting a sleeping attitude, in which they ordinarily feel safe. Pseudo-sleeping therefore occurs when the impulse for action is too weak.

Kortlandt (1940, *Tijdschr. v. Psychologie*), however, considers the P.S.A. is a substitute activity occurring when an inhibiting factor is strong enough to prevent the impulse from following its normal channel. One then has two opposing and mounting emotional “potentials”, and “sparking-over” occurs at a critical level, leading to the appearance of an attitude, or behaviour pattern, belonging essentially to another element of the behaviour complex. Timbergen (“Die Ubersprungbewegung”, 1940, *Zeit. für Tierpsychologie*) attributes substitute activities (Übersprungbewegung) to one of three internal situations:—

(i) to a conflict between antagonistic impulses;
(ii) to the sudden attainment of a goal;
and (iii) to the lacking of a stimulus which should properly occur.

The difference between Makkink and Kortlandt lies in the fact that the former does not agree that the pseudo-sleeping attitude can be a true “substitute activity”, as its very nature prevents it from helping the bird “to run down”, since no action takes place. We feel, however, that it is quite possible for emotional tension to be dissipated merely through the forced assumption by the bird of a resting attitude.

Makkink has also recorded the P.S.A. as occurring in the Avocet (*Recurvirostra avosetta*), and Darling and Morley (*British Birds*, Vol. xxxvii, p. 58) have noted what may be a significant observation in this respect, that Common Sandpipers (*Actitis hypoleucos*) interspersed their normal nuptial displays with periods of apparent repose “wherein the birds stood still one or two feet apart, with subdued trilling, and at intervals of one-half to one second, raised and lowered the nictitating membrane. Quite often the beak was tucked into the scapulars as if in the posture of sleep, with the membrane worked as above”.
It may well be that the "pseudo-sleeping" attitude is more widely employed in displays, especially amongst the Charadrii, than is at present realized, and further work on this interesting posture is needed.

(d) Substitute Activities (other than pseudo-sleeping).

Huxley was one of the first to draw attention to the fact that there is often complete identity of posturing and reaction, for both hostility and sexual display. Thus besides the piping ceremony, he instances bathing, and what he terms "pecking at the ground" as evidences of courtship activities, and we may recall that bathing by our pair of Oyster-catchers sometimes followed a prolonged attack on the dummy, whilst the throwing of stones, grasses, etc., was an ever present behaviour pattern during our experiments.

It is often difficult to decide to which type of display a given pattern of behaviour properly belongs. Stone and twig throwing are normally present in both nuptial and aggressive displays and at nest-reliefs, but will appear as a "substitute activity" when the birds become confused or when normal outlet for emotional tension is blocked. In the same way, false-brooding occurs as a substitute activity when uncertainty arises within the bird's mental framework. It occurs commonly whenever an antagonistic impulse prevents normal brooding, and so we witnessed it when the dummy was too near to the nest, and especially in the cock when he became confused by the "unnatural" behaviour of the dummy in refusing to be driven away.

Finally, attention must be drawn to the fact that the lack of aggressiveness on the part of the cock Oyster-catcher compared with the hen, is similar to the behaviour of the pair of Ringed Plovers we described in our previous paper, for although the cock Ringed Plover did a certain amount of pecking at the dummy's feet, he was far less aggressive than the hen bird, and showed diminished reaction much more rapidly than she did. In addition, as in the case of the cock Oyster-catcher, he readily reverted to lure-displays of the "injury-feigning" type, a thing we did not witness in either hen bird.

Our observations duplicate in many respects those of Williamson (vide supra) on the Oyster-catcher in the Faeroes, where he invoked aggressive behaviour against his person (which involved actual striking by the birds against his shoulder), lure-display and false-brooding.

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OYSTER-CATCHER.

Fig. 1. Piping display at the dummy by the pair.

(Photographed by Stuart Smith).
OYSTER-CACTHER.

FIG. 2. PIPING DISPLAY AT DUMMY: TYPICAL ATTITUDE.

FIG. 3. FEMALE ATTACKING NAPE OF DUMMY.

(Photographed by Eric Hosking).
OYSTER-CATCHER.

Fig. 4. Female attacking head of dummy.
Fig. 5. Female carrying part of dummy's tail.
(Photographed by Eric Hosking).
Oyster-catcher.

Fig. 6. Male in "false-sleeping" attitude.

Fig. 7. Male (right) giving "lure-display."

(Photographed by Eric Hosking).
OYSTER-CATCHER.

Fig. 8. Female tossing grass as nervous reaction.
Fig. 9. Female in flight attack on elevated dummy.

(Photographed by Eric Hosking).
FIG. 10. FEMALE ATTACKING DUMMY FROM BELOW.

(Photographed by Eric Husking).
Oyster-catcher.

Fig. 11. Female attacking suspended dummy.

Fig. 12. Female holding dummy's beak.

(Photographed by Eric Hosking).
OYSTER-CATCHER.

Fig. 13. Female incubating, following diminished reaction.

(Photographed by Eric Hosking).
Oyster-catcher.

Fig. 14. Female looking at mirror-image.

Fig. 15. Female pecking at mirror-image.

(Photographed by Eric Hosking).
OYSTER-CATCHER.

Fig. 16. Female looking for adversary behind mirror.

Fig. 17. Female in "false-sleeping" posture before mirror-image.

(Photographed by Stuart Smith).