Shooting of wild geese in cold weather

During the hard winter of 1962-63 geese and other birds suffered severely in many parts of Europe. A joint appeal to sportsmen by the Wildfowl Trust and the Wildfowlers' Association of Great Britain and Ireland, asking them not to shoot birds in places where they were obviously weakened by shortage of food, met with a good response from organised wildfowlers. But there continued to be a great deal of shooting by irresponsible people. The following letter received by the Trust provides a splendid example of effective action against this kind of behaviour. We publish it to draw attention to a means of helping the Trust's funds while encouraging respect for the law and for high standards of sportsmanship.

* * *

Helensburgh.

26th March, 1963

Dear Sir,

During the recent very hard winter I had a large number of wild geese sheltering and feeding in the fields in front of my house and with a bit of effort by our family we had managed to protect them from various so called " sportsmen ".

However, unfortunately on one occasion a lorry driver was successful in shooting one of the geese from his vehicle. My wife with the aid of field glasses was able to pick up the name of his employers on the lorry and I, in turn, when the matter was reported to me, was able to report the matter to the Company. Therefore, when the driver reported to his Depot he was informed that he could either be immediately dismissed or pay the sum of £5 to your Society. He preferred to do the latter and I have pleasure in enclosing a cheque for £5.

It is very difficult to understand the mentality of people who shoot wild fowl under conditions such as existed at that time; the creatures were starving on many occasions and barely able to fly. I was very glad indeed that I was able to trace the man.

So far as I am concerned, I have been shooting all my life but one only does a thing if it is reasonably difficult and I think to shoot one of these geese was like shooting ' a grazing cow '!

I have always been interested in your Society and should you care to send me an application form I would seriously consider asking you to accept my membership.

Yours sincerely,

JOHN L. ROXBURGH.

Waterfowl drowning accidentally under ice

OCCASIONS when waterfowl are accidentally drowned under ice must be extremely rare; in fact, we have been unable to trace any record of such a thing happening in this country, other than by swimming into underwater obstructions such as nets or, of course, in captivity.

On 17th March, 1962, a first-year Shag *Phalacrocorax aristotelis* spent the night roosting on a nesting raft on the wildfowl experimental reserve at Sevenoaks, Kent. During the night there was a severe frost and much of the lake froze except for an area of about 50 square yards around the raft. Apart from this, the nearest open water was across 100 yards of ice. At full daylight the Shag was seen to leave the raft and to swim around beside it for a short while before it dived. It never reappeared. Next day, after a thaw, it was found floating dead beside the river outlet from the lake.

At post-mortem, water was found in both lungs and in the trachea and had penetrated into the abdomino-thoracic air-sacs. It was interesting that in spite of being an obvious case of death by drowning, the lung tissue did not sink in water, the reason for this being that air from the air-sac systems of the bird must seep back into the lungs after death, particularly when the bird is handled. All the internal organs were intensely engorged and dark from venous congestion, as would be expected.

It is interesting to speculate how the young Shag came to make such a fatal misjudgement. The bird was one of a remarkable " wreck " of Shags, which was found in numbers widely distributed in south and east England. Being a temperate zone sea bird, it is unlikely that it had ever experienced ice before, certainly not under conditions such as on the night of 17th March, when large areas of fresh water froze over. It was this inexperience which was responsible for the fatal dive. " Wrecked " Shags appear to suffer considerable mortality. On 15th March, 1962, I. Crussell found four recently dead at Ruxley Ponds, Kent, and the circumstances were suggestive of drowning, although no examination was made of the bodies.

Experience is undoubtedly of great importance for survival under such conditions, for a number of Pochard *Aythya ferina,* Tufted Duck *Aythya fuligula,* Goosanders *Mergus merganser,* Smew *Mergus albellus* and Coot *Fulica atra* had been feeding by diving beside the ice for several weeks without any accidents and, of course, both the Eider *Somateria mollissima* and the Black Guillemot *Uria grylle* are able to winter in the high Arctic in Greenland, feeding by diving in the small areas of open water in the ice (Freuchen and Salomonsen, 1958, *The Arctic Year*).

It would be interesting to know what species of wildfowl are liable to drown under ice in collections such as the Wildfowl Trust. One would expect those diving species which lack any experience of ice under natural conditions to be the victims. On the other hand, their offspring bred in this country in captivity might be expected to learn about ice before conditions became severe enough to cause a fatal accident.

On 9th May, 1962, a duck Pochard, a pinioned bird kept in captivity, was drowned by getting its head caught between two rocks while feeding under water. At post-mortem, exactly similar findings were recorded as in the young Shag, including lungs which floated, but, of course, the accident occurred under artificial conditions.

James and Jeffery Harrison

Drowning in wildfowl

OVER a period of four years 16 cases of drowning in wildfowl have been found on autopsy. Ten were in birds from the Trust's collections and represented about 1% of the post-mortems on birds of similar ages to those under discussion. The cases are detailed below:—

Head caught in obstacle just below surface of water		
Spotted Whistling Duck *Dendrocygna guttata*	1st winter ♀ (full-winged)	Healthy
Chilean Pintail *Anas georgica spinicauda*	Fledgling ♀ (pinioned)	Healthy
Mallard (wild) *A. p. platyrhynchos*	Adult ♀ Adult ♂ Full-grown ♂ Full-grown ♂	Healthy Healthy Healthy Healthy
Cinnamon Teal *A. cyanoptera*	Adult ♀ (pinioned)	Pneumonia
Common Shoveler *A. clypeata*	Fledgling ♀	Pulmonary congestion
Australian White-eye *Aythya a. australis*	Juvenile ♂ Fledgling	Healthy Healthy
Trapped under ice		
Spotted Whistling Duck *D. guttata*	Adult ♀ (pinioned)	Healthy
Fulvous Whistling Duck *D. bicolor*	Adult ♀ (pinioned)	Healthy
Salvadori's Duck *Anas waigiuensis*	Adult ♂ Adult ♀ (pinioned)	Healthy Healthy
European Green-winged Teal (wild) *A. a. crecca*	Full-grown ♂	Pneumonia
Mallard (wild) *A. p. platyrhynchos*	Full-grown ♂	Healthy

Deposits of mud and dirty water were found in the respiratory tracts of the first group and the latter in the second group. In general the post-mortem findings were similar to those described by Harrison & Harrison (1963). It had been thought that drowning would have been the ultimate cause of death in more cases of diseased birds, through weakness and inability to keep the head out of the water. Only two birds showed macroscopic signs of disease and in each of the 16 birds the general condition was moderate to good, indicating an absence of chronic disease.

The circumstances leading to drowning involved either the bird being caught in some underwater obstacle or being trapped under ice. The birds were mainly Anatini with a few Dendrocygnini and Aythyini. Post-mortems on species in each of the other tribes in the Anatidae revealed no case of drowning. These cases, though small in number, indicate that the likelihood of drowning may to some extent be correlated with feeding habits, diving ability and experience of icy conditions.

The Anatini are surface- and shallow-water feeders and often search for food in small holes in banks just below the surface of the water. Occasionally the neck gets into a narrow part of the hole, trapping the bird which then drowns. The Mallard in particular seems to have a natural curiosity to search such holes, which may account for the four cases. The Spotted Whistling Duck is intermediate between the dabblers and the true diving ducks in that it feeds in shallow water but has considerable ability to dive in a coot-like manner in a search for food. The case detailed was trapped in a pipe just below the

water surface, presumably while searching for food. The two Australian White-eyes were in shallow water and were drowned in the same manner as the Anatini. Many of the diving species in the Aythyini, Mergini and Oxyurini can range freely under water in a search for food and are not likely to become trapped in normal circumstances. However drowning is known to occur regularly in the first two groups under artificial conditions where the birds are caught accidentally in deep-set fishing nets (Schorger, 1947; Gardarsson, 1961).

The liability to drowning by trapping under ice may be inversely correlated with diving ability and perhaps experience of icy conditions (Harrison & Harrison, 1963). The Anatini are not good divers and may be expected to have difficulty in getting back to the ice-free water, should the bird attempt a shallow dive and surface under the ice. The Teal and Mallard as species have experience of ice but possibly not as individuals. The Whistling Ducks, though good divers, do not range freely under water and should therefore normally surface away from the ice. However both they and the Salvadori's Ducks are tropical species and would not have experience of ice thus militating against their survival. Many of the Mergini are sea ducks and would seldom encounter ice except in the Arctic where a good ability to dive and experience of ice helps survival.

No case of drowning was found during the very cold weather in early 1963 even though some tropical species and poor divers were restricted to small areas of water on the Trust's ponds. This would suggest that the birds had gained experience from the 1961-62 cold spell and consequently escaped this particular cause of death.

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J. V. Beer

The rapid sexing of downy Anatidae by the structure of the syrinx

MANY species of the Anatidae show a marked sexual dimorphism of the syrinx due to the presence in males of an asymmetric or, in a few species symmetric, swelling or bulla; a structure which is a valuable taxonomic character (Johnsgard, 1961). During the routine post-mortem examination of downy young it soon became apparent that, with certain exceptions, this structure could be used for the rapid sexing of these birds even if decomposition or trauma had obliterated the gonads or reproductive tract. Similarly, the method could also be applied to well developed embryos and adult birds, and even to live day old ducklings (presumably domestic forms of *Anas platyrhynchos*) by palpation at the base of the neck (Kamar & Yamani, 1962).

Table I lists by genera, following the nomenclature and sequence used by Scott (1957), those birds that can and those that cannot be sexed by the presence or absence of a bulla. The list is based on the examination of a high proportion of the species as downy young and, where these have not been available, on the examination of adult birds. The latter appears to be valid

Table I: The bulla in the downy young of the Anatidae

Tribe	Genus	Bulla present: Detection easy	Bulla present: Detection difficult	Bulla 'absent'
ANSERANATINI				
	Anseranas			–
DENDROCYGNINI				
	Dendrocygna		+	
ANSERINI				
	Coscoroba			–
	Cygnus			–
	Anser			–
	Branta			–
TADORNINI				
	Tadorna	+ +	+	
	Alopochen	+ +		
	Neochen		+	
	Cyanochen	+ +		
	Chloëphaga	+ +		
	Cereopsis			–
	Tachyeres	+ +		
	Lophonetta	+ +		
ANATINI				
	Anas	+ +	+	
	Hymenolaimus	+ +		
	Malacorhynchus	No description available		
	**Rhodonessa*	+ +		
	Stictonetta			–
	Merganetta		+	
SOMATERIINI				
	Somateria	+ +	+	
AYTHYINI				
	Netta	+ +		
	Aythya	+ +		
CAIRININI				
	Amazonetta		+	
	Chenonetta	+ +		
	Aix	+ +		
	Nettapus			–
	Sarkidiornis	+ +		
	Cairina	+ +		
	Plectropterus	+ +		
MERGINI				
	**Camptorhynchus*	+ +		
	Melanitta		+	–
	Histrionicus	+ +		
	Clangula	+ +		
	Bucephala	+ +	+	
	Mergus	+ +		
OXYURINI				
	Oxyura			–
	Biziura			–
	Thalassornis			–
	Heteronetta			–

*Extinct genus

since in every species to date, even though considerable development may occur as the bird grows older, a bulla has always been present in the downy when present in the adult. In a few cases descriptions in the literature (Johnsgard, 1961) have been used. Many downies have been sexed by this method and by the more conventional method and in no case did they

disagree. However, the author has seen one bird, an adult Mallard *A. platyrhynchos,* with full male plumage but with no bulla.

In using this table there are a number of points that should be kept in mind. The males of all species in a genus either have or do not have a bulla, except *Melanitta* in which one of the three species, *M. nigra,* has no bulla. Those genera in which a bulla is present have been divided into two groups, easy and difficult. In the former the bulla is obvious in the downy young but in the latter the small size of some species or symmetry, as in *Dendrocygna,* makes detection less easy. Some genera, such as *Tadorna,* have species in both categories. The third category mainly comprises the Anserini and Oxyurini with no bulla, or with a bulla that is so small, as in *Nettapus,* that no useful distinction can be made.

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J. V. Beer

The production of offensive excreta by nesting wildfowl

MANY ducks defaecate when suddenly flushed. In the wild the habit may be very common: for instance Bennett (1938) reports that 75 *per cent* of incubating Blue-winged Teal defaecated on the nest when disturbed. Most observers have stressed the invariably foul smell of these faeces. At Slimbridge, where 160 Mallard nests in the Decoy Wood were inspected daily in 1961 and 1962, less than a quarter of the females left droppings on their eggs. Only three females out of 100 in 1961 and four out of 60 in the following year produced stinking, yellow, semi-liquid faecal material. These individuals reacted in the same way throughout the incubation period; furthermore, one nest-site was graced by a female with evil-smelling droppings in both years, possibly the same bird.

The smell is so memorable that, together with the contrast between the Slimbridge observations and those reported in the literature, it provoked an otherwise unlikely consideration of offensive excreta and their possible advantage to the nesting duck.

When a bird is frightened the rectum is prematurely emptied, a simple reflex action which lightens the bird for the escape flight. Because of the general abdominal spasm, fright also produces an evacuation of the caecae. This applies to ducks flushed from water, cover or their nests. The normal production rate of caecal droppings in Mallard is uncertain but in geese is in the ratio of 1:6 or 7 rectal faeces. Caecal droppings are homogeneous, moist and brightly coloured (the exact colour depending on the diet) and always more odoriferous than ordinary excrement though not offensive. Since the caecal constituent is present in droppings of flushed incubating Mallard, it may be responsible for the characteristically evil odour.

In many species studied in the wild the females leave the nest of their own accord only once or twice each day and these departures become less frequent as incubation proceeds. On leaving, the bird covers the eggs with down and defaecates voluminously after taking wing. She may wash and preen, feed sparingly and then return to her nest. There she remains, much longer than the two to four hours that the meal normally takes to pass through the gut. Under these circumstances there is unusual retention of food remains and, at body heat, every likelihood of the production of odoriferous compounds. The chemical nature of these is unknown but they may be derived from indole and skatole, which are formed by putrefaction of proteins, or from some volatile ester. The smell disappears as the faeces dry, suggesting that an ester is involved.

From this argument it follows that the bird that sits longest is likely to produce the smelliest faeces. While there is no direct evidence that this is so, it could account for the difference between observations on ducks in the wild and at Slimbridge where foul droppings are the exception rather than the rule. McKinney (1953) found that Slimbridge Mallard to some extent time their absences from the nest by the feeding of birds in the collection and left at least twice daily in response to sounds from the pens. There was, however, considerable individual variation. Protection from certain ground predators and the availability of ample supplies of food close to the nest may be the reason for the relatively frequent feeding of many of the Slimbridge breeding birds. In any event, their feeding regime seems to be far more regular than one might except in the wild.

Further, in species where both sexes incubate, such as the geese, or where there is frequent feeding and defaecation, the smell of the droppings is not noticeable. C. Young (personal communication) says that the hole-nesting Shelduck do not miss a meal while incubating nor do they foul their nests. They may produce solid faeces made of mollusc remains after being flushed from their burrows but the caecal portion of these is not particularly conspicuous and the smell is inoffensive.

On the other hand, incubating Eider Ducks tend to sit tight but when flushed always produce offensive droppings (*e.g.* Beetz 1916). The normal faeces of the Eider are well formed, composed of ground-up mollusc shells and smell merely fishy, while those of nesting females are green, slimy and of a frightful odour. These birds do not feed at all during incubation (the bile and droppings of unfed ducks are always green). Although the females may drink every two or three days, there is unlikely to be a complete intestinal evacuation for four weeks unless the bird is flushed. When this happens, the stored gut contents, such as green bile, urates from the kidneys, food remains and bacterial cells plus the caecal fluids, are violently ejected.

It has sometimes been suggested that the shedding of faeces on the nest has survival value. Wright (1954) thought it possible that the Black Duck made a deliberate attempt to camouflage the eggs which she had not had time to cover with down. Williamson (1949) regarded the habit as a distraction display in Eiders, a behaviour pattern evolved from the purely reflex action of defaecation. The smell is certainly so nauseating that one might well suppose it could act as a deterrent against egg-eating mammals. Gross (1938) believed that the unexpected spray of filth as the Eider sprang might confuse or discourage certain enemies and several authors have stated that neither foxes

or dogs will touch a fouled Eider's egg (Beetz, 1916; Salomonsen, 1950; Bannerman, 1958). Against this is the fact that the faeces frequently land beyond the nest and that the smell lasts only as long as the excrement is wet. It quickly disappears from the warm eggs; in the Eider (Beetz, 1916) this takes ten to fifteen minutes after which the material falls off as an unobjectionable powder.

The only experimental approach to the problem was that made by Hammond & Forward (1956). They suggested that, far from frightening predators, the smell of the faecal material may increase the chances of discovery by egg-eaters, at least where prairie ducks are concerned. They set up a series of six trials and scented hens' eggs with excrement from nests. In one case there was significant evidence that odour increased egg loss, in the others there was little difference in the predation rate between fouled eggs and the unscented controls. No deterrent effect was found and, indeed, a dog showed no abhorrence for the odour or for eggs covered with faeces. It would be interesting to make similar trials with Eider droppings.

It certainly seems that defaecation when flushed from the nest is a reflex action on the part of the duck; that any spattering of the eggs is purely by chance, and that the evil smells are produced simply as a result of constipation through lack of exercise and regular feeding. The possibility remains that some females are more prone to this than others, either because they sit more tightly or because of some physiological disorder.

I am very grateful to M. A. Ogilvie for his observations on Mallard nesting at Slimbridge in 1961 and 1962.

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Janet Kear

Heavy mortality of Mute Swans from electrocution

ON 25th April, 1962 I came across a remarkable number of Mute Swans *Cygnus olor* which had been killed by electrocution on flying into an overhead cable, fitted with a " high speed automatic recloser system ", to ensure that the resulting " swan fault " would only last for a few seconds. The cable, consisting of three lines, is sited about 10 yards above the ground and carries electricity to a large isolated farm on Romney Marsh, Kent. The route crossed the regular flight line of a herd of Mute Swans, which had been roosting on a farm reservoir and grazing on winter wheat in the early part of the year. The

flight line extended for about a quarter of a mile and in this distance beneath the cable there were the bodies of 21 swans, almost all of which appeared to have been killed within the previous one or two months, when up to 70 swans had been using the reservoir, of which 90% were adults. This proportion was reflected in the 21 dead, all of which were adults except two. If the flock was composed of the same birds during this period, which is a reasonable assumption, then the cable caused a mortality of 30%. It might seem surprising that the swans had not learnt to avoid the cable, which is easily visible, but one does not know at what time of day most were killed. Certainly a number caused " black-outs " at the farm during the evenings, when of course the cable would be difficult or impossible to see. Judging from the state of the bodies, the rate of kill had been fairly evenly distributed during the period. All except four, which were in water too deep to reach, were examined for rings and three adults carried them. They had been ringed as follows:—

23rd April, 1960, at Lydd, Kent, full-grown male. (Dungeness Bird Observatory);
1st August, 1960, at Lydd, pull. (Dungeness Bird Observatory);
10th March, 1961, at Maidstone, Kent, first-winter. (Mid-Kent Ringing Group).

Jeffery Harrison

Aspergillosis in an immature Bewick's Swan

An immature male Bewick's Swan *Cygnus columbianus bewickii* was present at Maidstone, Kent, by the town bridge over the Medway, from 10th January to 14th February, 1962 when it was found dead. It was brought over to Sevenoaks by Mr. E. G. Still, to whom I am indebted for the specimen. It had previously been ringed by Mr. Eric Philp. The bird was autopsied on 16th February when the sex was established anatomically. There was no wasting and in fact, the bird could be described as in fat condition; death was clearly attributable to acute aspergillosis. The main fungus mass was in the bronchial tree, from whence it had infiltrated the abdomino-thoracic air-sac. It seems likely that the fungus had been ingested with bread fed to the swan by the general public. It had joined a herd of Mute Swans and had become completely tame.

I am indebted to Dr. Keith Randall, Consulting Pathologist to the Orpington and Sevenoaks Hospitals for investigating the fungus, and to Mr. A. H. Heather for culturing the fungus, which has been identified as *Aspergillus fumigatus.*

James M. Harrison

The wedge-shaped yellow area on the bill of a Bewick's Swan

An opportunity to observe wild Bewick's Swans *Cygnus columbianus bewickii* from only a few yards occurred at the Wildfowl Trust, Slimbridge, Gloucestershire on 24th November, 1962, when towards the late afternoon fifteen flew into the enclosures, of which eight alighted on the largest pool in the Big Pen. An adult particularly attracted my attention because although its bill conformed in shape and size to that of the western race (*bewickii*) the area of

yellow on the side of the upper mandible was wedge-shaped and extended about an inch beyond and below the nostril, while in addition there was a narrow yellow area near and parallel to the cutting edge of the mandible. Even at so close a range, when comparisons with its companions were relatively easy, my immediate reaction leaned towards it being a Whooper Swan *C. c. cygnus,* because the bird's bill closely resembled in pattern that of the latter species. I. C. T. Nisbet (*British Birds* 52 : 393-416. 1959) considered that 5 to 10 *per cent* of the large influx of Bewick's Swans into Britain in 1956 may have been misidentified as Whoopers. B. King (*Wildfowl Trust 11th Ann. Report* : 156-7. 1960) observed two large-billed Eastern type Bewick's (*jankowskii*) at Durleigh Reservoir, Somerset, in February of the same year, which could have been thought to be *C. c. cygnus.* The details of the Gloucestershire bird described above emphasise the possibility of mis-identification of the two species in an appreciable proportion of cases.

Bernard King

An Eastern Greylag Goose in Somerset

WHILST on a visit to the Bridgwater Bay National Nature Reserve, Somerset, on 8th April, 1962, I observed a Greylag Goose *Anser anser* flying from Stert Island towards the saltings named ' The Fenning '. As the goose flew overhead and gradually descended I could see the large grey areas on the wings very well. It soon alighted on the saltings about 150 yards from where I was partly concealed, and stood on the alert for long periods, feeding intermittently. I was able, using a x 40 telescope, to obtain details of the bird's plumage: head and hind neck light brown; mantle brownish-grey, with conspicuous whitish or light narrow barring on mantle and scapulars, formed by well defined paler edgings of individual feathers; primaries and secondaries also pale edged and noticeable from a distance; tail brown, broadly tipped white; front and side of neck pale to whitish buff; paler on rest of very light under parts. The bill appeared clear pink with a whitish nail; the legs were the same colour as the bill. The bird was not ringed. It appears to be an example of the race *A. a. rubrirostris,* breeding in southern Russia. The possibility of the bird being an escape cannot be ruled out, although Mr. S. T. Johnstone, Curator of the Wildfowl Trust, Gloucestershire, informs me that there are no full winged *rubrirostris* or hybrids in the collection at Slimbridge; nor does he know of any ' free ' Eastern Greylags in collections elsewhere. In the *Wildfowl Trust 7th Ann. Report* : 13. 1953, mention is made of three Greylags thought to belong to a Baltic or Russian population staying in or around the Trust's enclosures from 21st December, 1953, to 30th March, 1954. I saw those geese several times. The Somerset bird was even paler in appearance and its bill, except for the nail, was pinkish throughout. Peter Scott and Hugh Boyd state in *Wildfowl of the British Isles* (p. 22. 1959) that pale, pink-billed birds probably of Continental origin have been recorded as stragglers, but few detailed descriptions of such birds have been published. It seems desirable that more attention should be paid to the appearance of Greylags occurring outside their usual haunts in this country, to see how often geese from eastern populations are to be found.

Bernard King

Canada Goose and Great Crested Grebe sharing a nesting raft

A GREAT deal of interest has been expressed about the wildfowl nesting rafts which are in use at the gravel pit experimental wildfowl reserve at Sevenoaks, which we described in the *13th Annual Report* (pp. 101-8). These rafts are of two types: the first, 12 x 12 feet square, is made of three metal float tanks welded together, to give a buoyant platform with a foot of freeboard; the second type has a float tank at each end with a lower central portion of railway sleepers, the surface of which is only a few inches above water level. In 1961 we only had one of the latter anchored on the east lake of the reserve. This was successfully used first by a pair of Canada Geese *Branta canadensis*, which nested high up on a float tank. When they had gone a pair of Great Crested Grebes *Podiceps cristatus* built a nest of sticks on the lower central portion and hatched off two young in early September. In that same summer, another pair of grebes on the west lake nested first on a gravel bank at the south-west corner, using sticks for their nest. They lost their clutch when the eggs were flooded following a severe thunderstorm. They then built a floating nest close to the north-east corner of the lake, but lost their eggs again, probably to boys.

By the summer of 1962, a second raft of the same design had been made for us by the owner of the Company, Mr. George Wallis, and had been anchored on this lake " especially for the grebes ". By 28th March a pair of Canada Geese were nest-building on it, choosing the elevated float tank for the nest site, as did the pair nesting on the similar raft on the east lake. By 3rd April, a pair of Great Crested Grebes were building a large nest of sticks on the exact site of last year's nest on the gravel bank at the south-west corner of the lake. Presumably, they were the same pair. On 15th April, we noted that all six rafts on the reserve were occupied by nesting Canada Geese. By a remarkable coincidence, a severe storm on 20th April resulted in the grebe's nest being submerged for the second successive year. The birds immediately deserted, to build a new floating nest at the old site under a willow tree at the north-east corner. This was different from their behaviour in 1961 when the birds returned and incubated their eggs for a further four days after they had been immersed in water for three days. By 2nd May, 1962 an egg was laid in the second nest, but this too suffered a similar fate and disappeared. On 8th May, a grebe was seen on the railway sleeper portion of the new raft, watched without concern by the sitting Canada Goose, and next day both birds were incubating peacefully within six feet of each other, the goose looking down on to the grebe from its higher resting position.

On 16th May the goose hatched off four goslings, which both parents brought back to roost with them on the raft for the next few nights. We feared that the grebe might be frightened off when this happened and that the eggs might be trodden on or knocked into the water. No such accident occurred and on 6th June four grebes were also hatched off. The Canada Goose has a bad reputation for interfering with other birds in the nesting season and it seems remarkable that this one accepted the arrival and nest-building of the grebe within six feet of her during the last fortnight of incubation and in such a restricted area as on a 12 x 18 foot raft.

We are very grateful to Pamela Harrison for the photograph illustrating this note. In order not to disturb the birds, it was taken at 60 yards with a

400 mm. telephoto lens. We are also entirely indebted to Mr. George Wallis for the design and construction of the rafts and to the men of his Company for their enthusiastic help.

James and Jeffery Harrison

Observations on nesting Shelduck

THE Shelduck *Tadorna tadorna* remains a considerable enigma. Only during the last twenty years has the fascinating pattern of its moult migration been discovered, and many aspects of its breeding biology remain shrouded in uncertainty. The main reason for this lack of knowledge is that the species usually nests in holes and, whilst its choice is catholic, the difficulty of observing behaviour at such nests is considerable. Full protection and the bird's unpalatable flesh have also helped to limit knowledge insofar as the species is of little interest to wildfowlers and in consequence research prompted by economic and harvesting considerations such as has taken place on other species of waterfowl has been lacking. My own studies on Shelduck have been made in the Thames estuary in Kent, where the species is an abundant winter visitor and also breeds commonly. In this short paper some features of the habits at the nest are described. It is hoped to publish a more complete account of the breeding biology later.

The two most common nesting situations in my study area are in stacked hay and in trees; all the observations described here were made at such sites. Tree sites are especially fascinating and one of the most strangely beautiful experiences for anyone interested in ducks is the sight of a pair of Shelduck circling and flighting through the fresh green foliage of upland tree screens in May and early June, particularly when the presence of a nest is known with certainty. I have described elsewhere the hiding reaction of a female and brood when surprised at the nest (Hori, in press). Since that observation I have recorded a number of identical reactions from incubating birds. Typical was that of a female on 3rd June, 1962. This bird was nesting in a hollow bough of a pollarded elm about fifteen feet from the ground and had been under observation since late May. As is often the case with such trees, not only was the trunk hollow but so were the stumps of old boughs which ringed the top of the trunk forming a series of holes or antechambers off the trunk, with access from inside only. By 3rd June the ten eggs were in an advanced state of incubation. On climbing the tree that morning I detected movement inside and was just in time to see the female finish covering the eggs with down, slip quietly out of the nesting hole and steal into an adjacent hole. She went to the far end of the latter, some two feet long, and flattened herself against the end. This clutch was subsequently hatched on 10th June. Another example of the same behaviour was recorded from a bird nesting in a haystack. This nest was approximately twenty feet above the ground in a " blind " hole some twenty feet long. Here the bird had obtained its hiding place by building the nest fifteen feet from the entrance, thus giving itself another five feet behind. When disturbed the bird would leave the nest and hide in either the approach or the rear tunnels, usually the latter. Only in the event of severe disturbance would it leave the site altogether. When the entrance hole was blocked it would merely slip quietly into the rear hole.

I have now witnessed the hiding and escape behaviour so often that I consider that whenever Shelduck nest in holes they always have an escape tunnel associated with the nest hole. So far, most of the escape holes I have found have been " blind " and the female has left the nest to hide in them whenever danger threatened. A few holes have been alternative exits from which sitting females escaped when necessary and one " open site ", inside a building, had a separate hiding tunnel. My observations lead me to believe that as long as the danger is not too great or too sudden, the female covers her eggs before leaving them, as do most of the Anatidae. In a paper by Captain F. W. Dewhurst (*British Birds* 24 : 66-9. 1930), among other interesting but unsubstantiated comments, I was surprised to find the statement " very often a bolt-hole connects with the nest ". This referred to nests in rabbit-holes and, although I have not opened any of these for examination, I have very little doubt of the accuracy of the statement.

Birds incubating in stacked hay will accept a remarkable amount of disturbance. One female that I had under observation for most of June, 1962 had 18 eggs in a nest five feet along a hole in hay. To test her attachment I gradually " opened up " this nest until, on 24th June, it was virtually an " open site ", i.e. it was about two feet from the face of the stack and when the bird sat she remained in full view from the outside. On 24th June she remained sitting and looking at me while I photographed her from four feet range. Three days later the nest was almost buried when a load of freshly cut hay was stacked on top of the old. An access hole was made through the new stacking to correspond with the previous entrance and the bird continued incubating. Another female with twenty eggs was found during delivery of the same hay. As the eggs were already chipping one of the farm workers made up a " pen " from bales and transferred the clutch and female into it. The bird was given her freedom next evening when she led her brood away as though nothing had happened.

Shelduck can be relatively fearless on the nest. A tree nesting female who was under observation for the whole of her incubation period in 1962 always walked off her eggs to hide in an " escape tunnel " during the first seventeen days of my visits. I last saw her on 30th June when she hissed at me very loudly each time I looked into the hole. I had to push her very hard to move her off the eggs and all the while she banged and buffeted my hand with her wings and bit repeatedly. On examination I found the eggs had not chipped, but the chicks could be heard scraping about inside quite plainly. This was exactly thirty days after the bird started incubating.

Hissing by sitting females is another habit which I have met with commonly and it appears to be the general reaction to predators. An occupied rabbit warren can frequently be identified by listening carefully for the hissing threat of the female. Once caught, the females are generally passive and their gentleness makes them extremely attractive to handle. Indeed some of the birds my wife and I have had under observation in the wild have become great favourites whom we look forward eagerly to meeting again in the future.

John Hori

Additional Note: As the proof of this paper passes through my hands, the incredible has happened. After a moult migration and a winter of unprecedented severity, AJ 62813, the " fearless " female mentioned above, incubates 10 eggs in precisely the same hole as the one she used in 1962. J.H.

Congenital malformations of the feet in Mallard ducklings

DURING the 1961 breeding season at the Wildfowl Trust all ducklings in the collections, and all eggs that failed to hatch, were examined for deformities. Six examples of abnormal congenital development of the beak and skull have already been described (Harrison & Kear, 1962); in addition, one Mallard brood, hatched by a wild female that nested within the enclosures, contained a number of polydactylous ducklings.

The figure shows the three types of deformity found : (a) complete duplication of hind toe, (b) enlargement of middle toe with duplication of nail and terminal phalanges, (c) abnormal proportions and positioning of the toes. Seven ducklings of the brood had normal feet, two showed all defects on both feet, the tenth bird had all defects in one foot and (b) and (c) in the other, and the eleventh duckling had defects (b) and (c) of both feet.

The embryonic limb bud has a core of undifferentiated tissue, the mesenchyme, which is condensed and replaced by cartilage at the site of the long bones and separates into bars corresponding to the digits of a pentadactyl limb. The influence of a special region of the distal ectoderm, the apical ridge, appears necessary in many vertebrate groups for the growth and segregation of the mesenchymal components of the distal part of the limb (Saunders, 1948). Since the digital condensations have a specific size, any genetically-determined increase in the mesenchymal plate corresponding to the future foot will result in an excess of digital bars being produced (polydactyly). Where residual amounts of mesoderm are too small to form whole digits, only partial separation of the bars occurs (syndactyly).

Apart from genetic failures, various external factors may upset normal embryonic development, such as excessive ranges of temperature, X-ray irradiation (Bagg, 1929) and the administration of certain drugs. The variations in extent of the deformity in the brood described here make it likely that the condition was of external rather than genetic origin. The relatively high proportion of abnormality among ducklings in 1961 (10 out of 1767 examined) did not recur in 1962 (0 out of 934 examined), suggesting some specific injurious factor affecting, in one year only, a number of the breeding birds at Slimbridge.

A minor degree of digital malformation such as this allows almost normal function. The effect of an increased number of digits may, however, alter their positioning and the increased trauma at the joints can lead to arthritic changes in captive birds.

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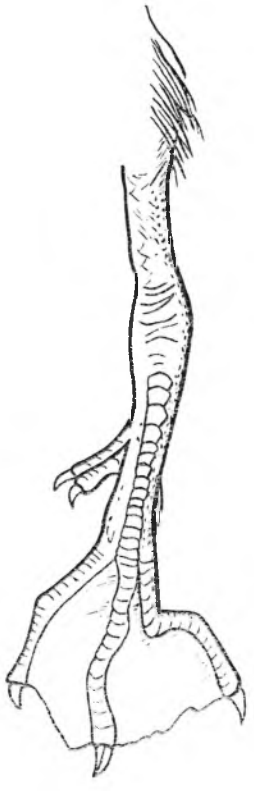
Anthony Napier



Foot of Mallard *Anas platyrhynchos* (5th May, 1961) showing polydactyly.

Mallard at sea off the west coast of Ireland

On a recent crossing of the North Atlantic from Montreal to Swansea aboard the s.s. " Birmingham City ", when about 190 miles west of the south-western Irish coast, I saw two Mallard *Anas platyrhynchos* flying round the ship. They were first seen at 18.30 hrs. on 2nd November, 1962, when the ship's position was 52° 15½′ N, 15° 26′ W. One was a female, the other a male in juvenile or partial eclipse plumage. They flew around the ship many times, occasionally very close, but made no attempt to land on board. They remained for about fifteen minutes before flying astern and being lost from sight in the heavy seas.

The Mallard twice alighted together on the sea near the ship, swimming uneasily until several Fulmars *Fulmarus glacialis* approached. The Fulmars were very curious about the ducks and on the second occasion about ten Fulmars settled around them, with others still in flight. The Mallard took off, closely followed by all the Fulmars which, however, soon lost interest and resumed criss-crossing the wake.

Stephen E. Chapman

Feeding association between Shovelers and Little Grebes

DURING the first two weeks of September, 1962, I made at least six early morning visits to a large pool at Marazion Marsh, Cornwall, where 15 to 30 Mallards *Anas platyrhynchos* and two female Shovelers *A. clypeata* were feeding. As they fed by up-ending it seemed as if the Mallards paddled with their feet primarily to maintain a vertical position whereas the Shovelers differed by using their feet vigorously to stir into suspension the sediment from or near the bottom of the pool. Two Little Grebes *Podiceps ruficollis,* an adult and an immature, were close to the Shovelers and eagerly dived into the cloudy water areas made by their active companions. Every time the Shovelers moved to new feeding grounds the grebes followed and sometimes scurried across the water in their eagerness to be near their benefactors. On no occasion did the Little Grebes attempt to associate with the Mallards. The use of Shovelers in this way by grebes does not seem to have been recorded.

Bernard King

Winter feeding behaviour of Red-crested Pochards

ON 17th November, 1962 a pair of Red-crested Pochards *Netta rufina* and an unattached male were found among at least 400 Common Pochards *Aythya ferina* at Cheddar Reservoir, Somerset. The Red-crested Pochard kept close together. During prolonged observation it became apparent that their method of feeding differed markedly from that of their companions. Whereas the latter fed below the surface of the water with some birds making throat-gulping movements immediately on emerging, the *rufina* always brought their food to the surface and then pecked at and swallowed the vegetation as it lay strewn on the water. This food was invariably obtained by the male of the paired Red-crested Pochard and commonly the male, after surfacing, swam close to its mate and so ' drew ' her towards the vegetation, which both birds then ate. It was rare for the female to obtain her own, but when she did so she showed no inclination to share it—and nor did the unattached male. E. H. Gillham (*British Birds* 48 : 322-3. 1955) has drawn attention to breeding pairs of Red-crested Pochards, both tame and wild, in a London park, in which the males fed their partners and E. J. M. Buxton (*Wildfowl Trust 13th Ann. Report* : 170. 1962) describes ' courtship feeding ' by pinioned and full-winged *rufina* on a private water in Wiltshire. Buxton noted this behaviour at all times from February to June. The Cheddar observations suggest that when individuals remain paired the practice of the male obtaining food and feeding the female may be normal well beyond the nuptial and breeding periods.

Bernard King and Robin Prytherch

Communal diving in turbid water by Red-breasted Mergansers

DEREK MILLS' interesting paper (*Wildfowl Trust 13th Ann. Report* : 79-92. 1962) on the distribution, breeding and feeding behaviour of Goosanders *Mergus merganser* and Red-breasted Mergansers *M. serrator* in Scotland prompted us to make prolonged observations on parties of Red-breasted

Mergansers diving to feed in the turbid water of the tidal River Teign, Devon, during November and December, 1962. The numbers varied from seven to twenty-four birds, comprising adult males and females (some of which were obviously paired) with a few recognisable immatures. They formed, if undisturbed by boatmen, into fairly compact flocks, and swam and dived in the same direction, although odd birds did so a few seconds before or after the main party had disappeared below the surface. We were able to make forty-three accurate stop-watch timings of their communal diving. These showed that the majority were below the surface within three to four seconds. The exceptions were the odd birds previously mentioned (approximately 20%); even including these, all were completely submerged within eight seconds. The average time below the surface was 17.4 secs., maximum period 29 secs. and minimum 13 secs. During one feeding period which included ten consecutive dives the dive-pauses averaged 7.3 secs. and were of the following duration: 2, 7, 10, 12, 10, 7, 3, 10, 5 secs.

On four separate occasions we observed three adult males and one female emerging with fish in their bills which were immediately swallowed. Otherwise, judging from the swallowing movements noted from other birds surfacing, ingestion had taken place whilst the sawbills were still submerged. Not once did we witness a Red-breasted Merganser on the surface with head partly submerged whilst searching for fish, and this method of feeding may be of little use when feeding in turbid waters.

Paul Hending, Bernard King and Robin Prytherch

Gulls "parasitising" ducks and other birds

THE note on Goosanders " parasitised " by Black-headed Gulls (*13th Annual Report* : 172-3. 1962) records a form of behaviour that I have regarded as quite normal for a very long time. The Black-headed Gull *Larus ridibundus* is certainly the worst offender and perhaps the first to have developed the habit in this country. On 9th September, 1950 at Aldenham Reservoir, Hertfordshire, I saw three gulls attacking two Herons *Ardea cinerea* that were carrying fish. On 14th October of the same year at some gravel pits near Radlett, Hertfordshire, five gulls were mobbing a Moorhen *Gallinula chloropus,* but I could not see if this was for the purpose of causing it to drop food. At Tring Reservoirs, Hertfordshire, on 15th November, 1953 two Black-headed Gulls attacked a Great Crested Grebe *Podiceps cristatus* whenever it surfaced with fish. On 22nd November at Radlett, two gulls were parasitising a party of Tufted Duck *Aythya fuligula,* and one actually alighted on the back of a duck and snatched something from the bill (see Sage, 1955). At Aldenham Reservoir, on 5th December, 1954 I again saw Tufted Duck being subjected to the same treatment. So far as Goosander *Mergus merganser* are concerned, Boyd (1944) mentions a flock of 40 being attended by Black-headed Gulls, and also a Smew *Mergus albellus.* During January-February of 1959, 1960 and 1961 numbers of Goosander were present at Tring Reservoirs and these were invariably attended by Black-headed Gulls. I first noticed an interesting extension of this habit at Thundridge, Hertfordshire, on 28th November, 1959 when these gulls were attending a flock of Lapwings *Vanellus vanellus,* which were attacked by one or more gulls whenever they picked up food. I have since seen this particular

association frequently in many different parts of the country. Both Boyd (*op. cit.*) and Glegg (1944) mention Goldeneye *Bucephala clangula* as another victim of this behaviour, and the former also mentions the Little Grebe *Podiceps ruficollis*.

The only record I have for the Common Gull *Larus canus* is from Hilfield Park Reservoir, Hertfordshire, where on 26th February, 1961 three adults were attending a flock of about 40 Wigeon *Anas penelope*. The ducks were bringing up Canadian Pondweed *Elodea canadensis* and on several occasions this was snatched by the gulls. Generally it was dropped again later, but several times I saw it swallowed by a gull. Boyd (*op. cit.*) mentions this species parasitising Great Crested Grebes.

I also have one record of Herring Gulls *Larus argentatus* indulging in this habit. On 3rd December, 1961 at Hunstanton, Norfolk, a number of adults and immatures were attending a scattered flock of about 150 Common Scoter *Melanitta nigra* and 37 Eider *Somateria mollissima* a short distance offshore, and I once saw a gull alight on the back of a surfacing Eider.

Bryan L. Sage

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The calls and displays of African and Indian Pygmy Geese

LITTLE is recorded about the sounds made by Pygmy Geese and the situations in which they may be made. Both the African and Indian species *Nettapus auritus* and *N. coromandelianus* have now lived for several years at Slimbridge and I have had many incidental opportunities of hearing their calls. The following notes summarise my records, though I do not claim to have made a complete inventory of the utterances of either species.

African Pygmy Goose. Delacour in *The Waterfowl of the World,* vol. III, p. 114 (1959), describes the voice of the male as " a soft, twittering whistle ". This general description applies to at least four different utterances used in different situations. In displaying to its mate on land the male holds its bill well down its breast as it utters a musical " chip, chip, chirrup, chiroo " which could be described as a song. When the male is excited it utters an explosive " chip, chip, chip " or " chip, chip, chirrup " with the neck extended, the head raised and the bill shaken up and down. This is used in greeting the female on returning from chasing off an intruding male and as a flight call after disturbance. A quiet, less demonstrative version of this call serves as an anxiety note.

When cornered, a single male often makes a hissing sound, though usually it threatens silently by just opening its bill.

The female responds to the " song " of the male with a sharper twittering whistle while bobbing her head up and down excitedly. A male returning from successfully repelling an intruder is greeted similarly. A subdued version of this twittering whistle occurs as an anxiety call. Sometimes this is uttered slowly (e.g. when a gull was flying over) and is then rather similar to the

" chip, chip, chip " of the male, though definitely more musical, even if with a querulous tone. According to Delacour the female's only sound is " a weak quack ". This I have not heard.

Indian Pygmy Goose. My observations have been made on three groups—the first consisting of one male and three females, the second of three young males and five females and the third of two young males and one female. I have heard four or five calls from adult males — (1) a nasal " grrr " used aggressively; (2) a nasal song " rick, rick, re-oo "; (3) a quiet rather nasal " quack " when anxious; and (4) a metallic " chak, chak, chak ", also when anxious. The young male in the third group uttered the nasal quack when being handled and the metallic " chak, chak, chak " after being released. The adult male in the first group once called " wak, wak, wak-a-wak " when driving off a female. This may be distinct or perhaps just a modification of call (4). The " song " is presumably the noise described by Delacour as " a curious rattling, metallic cackle, which is heard mostly on the wing ".

According to Delacour " the female is usually silent but can utter a weak squeaking note ". In the groups at Slimbridge two or three calls have been distinguishable: (1) " tuck-it, tuck-it ", in aggression or excitement when disturbed; (2) a conversational, musical " tick-a-tick-a-tick "; (3) " wick, wick, wick " like a rusty hinge, also conversational and probably when anxious and perhaps not really distinct from (2).

Few of the Indian Pygmy Geese have been seen to display, but Mrs. Peter Scott has photographed the behaviour of a pair before, during and after copulation. These photographs are reproduced in the gravure section of this Report. In the incomplete displays of a male to an unresponsive female which I have seen, the male dipped his bill frequently into the water on one occasion and on another bobbed his head up and down excitedly. In both cases he uttered no sound.

L. P. Alder

Pigmentation of the bones of certain Eiders

We have grown accustomed to the purple pigmentation found in the bones and teeth of Sea Otters *Enhydra lutris,* traceable to pigments in the Green Sea Urchin *Strongylocentrotus drobachiensis,* a primary item in the Sea Otters' diet. Such stomach samples of the Pacific subspecies of the Common Eider *Somateria mollissima v-nigra* as we have observed also contained specimens of the Green Sea Urchin. We were not, therefore, surprised to find the bones of these same eiders distinctly purple, presumably from the same pigmentation source. This observation has proven of great value to us in the identification of bird bones recovered from the nests of predaceous birds. Cottam in " Food Habits of North American Diving Ducks " (US Department of Agriculture, 1939), lists the Green Sea Urchin as forming part of the stomach samples examined from all three North American subspecies of the Common Eider and from the King Eider. As both the King and the Common Eider are circumboreal and so is the Green Sea Urchin it would appear likely that this pigmentation might be found in both species of eiders in many places.

Robert D. Jones, Jr.

FIELD MARSHAL THE RT. HON. THE VISCOUNT ALANBROOKE, K.G., G.C.B., O.M., G.C.V.O., D.S.O.

Lord Alanbrooke, the first President of the Trust, died on 17th June, 1963. The greatest soldier of his generation, his favourite recreation was watching and photographing birds. The many fine films he made included some of the wild geese at Slimbridge, where he was a frequent visitor. He held office for fourteen years, and rarely missed a meeting of the Council. His incisive approach and sure judgment were invaluable in many difficult situations that arose during the Trust's formative years. Such was his modesty, however, that few outside the Council knew just how much we depended on him. Though troubled by ill-health in the last few years, he retained a close interest in the continuing development of the Trust. We acknowledge our debt with gratitude and admiration.