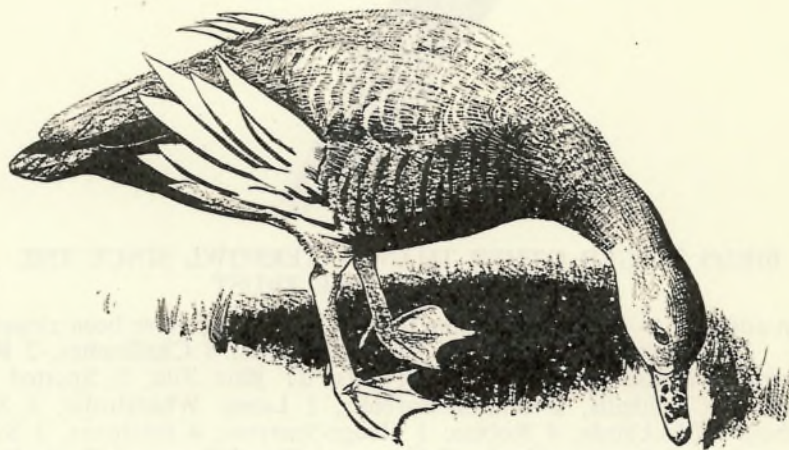


THE WATERFOWL COLLECTION

During the past year the collection has been greatly improved and is now without doubt the most representative in the world. Some 600 birds of 101 species and subspecies are to be seen in the various enclosures at the New Grounds. Representatives of 20 of these forms are, or were when they arrived at the New Grounds, the only living specimens of their kind in this country. This collection, therefore, offers a unique opportunity to the student of evolution



Plumed or Eyton's Whistling Duck

and systematics. It is also of great value to the study of behaviour and to many specific researches in bird pathology, parasitology, serology, etc. And to those who have no specialised interest in this direction, it offers a lively and beautiful sight as the birds cluster round at feeding time.

Additions to the Collection

In the early autumn a number of the quiet-looking, but attractive, Marbled Teal (*Anas angustirostris*) were sent to the New Grounds by air from the marshes at the confluence of the Tigris and Euphrates by Mr. Angorly of Basra. It was the first time for more than 30 years that this interesting little duck had reached Britain alive. The birds are now well established and should breed. The Marbled Teal has one interesting feature: there is no trace of a coloured speculum in the wing. In all other respects it seems to be a typical Teal of the *Anas* group, although it has some slight superficial resemblance to the Crested Duck (*Lophonetta specularioides*) in the soft pattern of body markings, the slight crest, the dark patch round the eye and the narrow black bill. A group of 6 Eastern Greylags came from the same source as the Marbled Teal.

A Shipment from America

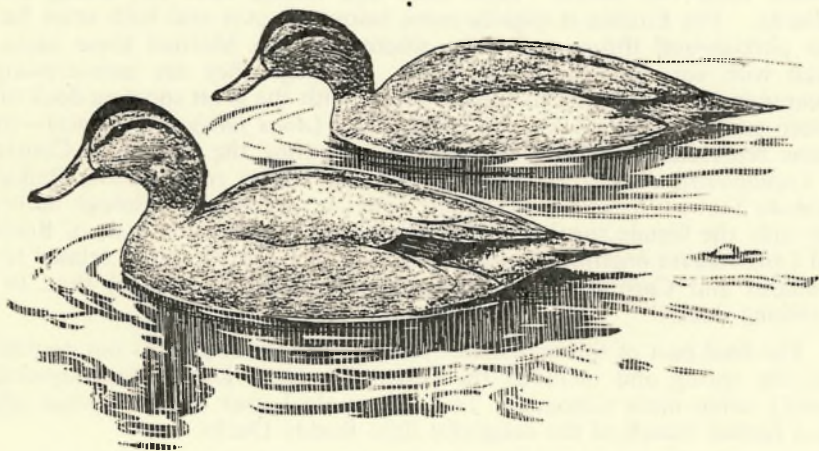
During the summer of 1948 Colonel Niall Rankin returned from Canada with a fine collection of new waterfowl for the Trust. We are most grateful to him for the trouble he took to get them back in such excellent condition. The pride of this collection was a splendid pair of Philippine Ducks (*Anas luzonica*), the first of the species ever to be seen alive in Europe. They are a true pair and, having come safely through a conveniently mild winter, seem likely to breed. They are a handsome couple with light chestnut head, sharp

black eyestripe, grey body and brilliant green speculum. Contrary to the descriptions in text-books, the bill is blue and the legs dull orange. The female's plumage is slightly less brilliant than that of the male. Her body is plain grey without spots—the only surface feeding or “dabbling” duck in which the female is not spotted. The voice, hitherto undescribed, is very characteristic in the male—a low clucking, quite unlike the Mallard—but the female's note is Mallard-like, though more clipped. The bird carries itself with a curious and very typical hump on the forward part of its back. Display and nesting behaviour, hitherto undescribed, will be carefully recorded. Colonel Rankin also brought some Western Canada Geese (*Branta canadensis occidentalis*)—a present from Mr. Oliver Wells of British Columbia—and two fine pairs of Pacific Black Brant (*Branta bernicla nigricans*). With the more recent addition of three Light-bellied Brent Geese (*Branta bernicla hrota*) taken on the Wexford Slob in Ireland and sent through the courtesy of Mr. J. Colloton of Curraclloe, and Dr. C. L. Flood of the Dublin Zoo, all three forms of the Brent Goose can now conveniently be compared one with another in the Big Pen.

Among the ducks brought by Colonel Rankin were some Canvasbacks (*Aythya valisneria*) and American Redheads (*Aythya americana*), especially reared for the Trust by Mr. A. Hochbaum at the Delta Waterfowl Research Station, Manitoba, Canada. Four magnificent Whistling Swans (*Cygnus c. columbianus*) also came from the Delta Station as a presentation.

An Export Shipment

In October the Director sailed for the United States and Canada in the liner *America* with a shipment of 70 birds, which included Pink-footed, Greylag and Red-breasted Geese (*Branta ruficollis*), Common Shelducks (*Tadorna tadorna*), Wigeon (*Anas penelope*), Teal (*Anas crecca*), Garganey (*Anas querquedula*), Marbled Teal (*Anas angustirostris*), Red-crested Pochard (*Netta rufina*), Rosy-bill (*Netta peposaca*) and Tufted Duck (*Aythya fuligula*). This shipment arrived without a single loss. The birds were mainly for sale to Zoos and collections in the United States as part of the export drive, but in some cases exchanges were made.



Philippine Ducks

The Director travelled some 15,000 miles in six weeks, studying the North American Wildfowl problem and visiting many of the most notable Refuges. He found that great interest was shown in the work of the Trust and that those responsible for wildlife conservation in North America were anxious to co-operate with the Trust. An exchange of ideas and publications was arranged with many of them.

The Second Shipment from America

Another result of this visit was the assembly of a number of live birds either as presents to the Trust, or in exchange, from those who were in sympathy with our aims and determined to help in some way or another. In this connection the following must be particularly mentioned: Mr. Joseph Sloan, Superintendent of Parks, Salt Lake City; Mr. Jack Livermore of Redding, Connecticut; Mr. W. J. Mackensen of Yardley, Pennsylvania; Mr. A. Griswold of the Philadelphia Zoo; Mr. Arthur Harlow of New York; Mr. Lee Crandall of the Bronx Zoo and Mr. Jean Delacour of the American Museum of Natural History, New York, who was particularly helpful and whose experience of keeping waterfowl in captivity is, of course, second to none. The most interesting of the birds of this shipment were several pairs of the North American Ruddy Duck (*Oxyura jamaicensis*), which is a fairly common bird in most parts of America. It belongs to the Stiff-tail family, which, although divers by habit, are in no way related to the Diving Ducks or to the Sea Ducks but stand in a group by themselves. The Ruddy Ducks, which do not usually travel well, reached the New Grounds with only small losses, and are now well established. They were hand-reared by an extremely able and successful aviculturalist, Mr. Calvin Wilson of the Tracey Aviary, Salt Lake City. Another important part of this shipment which came by air was a pair of Orinoco Geese (*Neochen jubata*), the male of which has been paired with the old female who has laid infertile eggs at the New Grounds for the past two seasons. Unfortunately she has not had time to become attached to this new male and it seems likely that this year's eggs will again prove infertile.

One of the most attractive additions to the collection is a group of four species of Tree Ducks or Whistling Ducks. These include Grey-breasted (*Dendrocygna autumnalis discolor*), Fulvous (*D. bicolor*), Cuban Black-billed (*D. arborea*) and White-faced (*D. viduata*). Two races of Mallards were included in the shipment. These are the non-migratory forms from the coast of the Gulf of Mexico—the Florida Duck (*Anas f. fulvigula*) and the Mottled Duck (*A. f. maculosa*) from Louisiana. There is little, if any, real difference between these two forms. Both male and female look not unlike female Mallards. The Florida is slightly more rufous all over and both sexes have a clear pinkish-buff throat and chin, whereas in the Mottled these areas are dotted with very fine black markings. Although they are uninteresting in appearance, it is significant to compare them with the great sporting duck of the Eastern parts of the U.S.A.—the Black Duck (*Anas fulvigula rubripes*)—which is now represented at the New Grounds. Among the Teal were Cinnamon (*A. cyanoptera*), American Green-winged (*A. crecca carolinensis*), Baikal or Formosa Teal (*A. formosa*), Versicolor Teal (*A. versicolor*)—although unfortunately only the female survived the journey—and a well-mated pair of Brazilian Teal (*Amazonetta brasiliensis*)—which is said to be more nearly related to the Mandarin and Carolina duck (*Aix galericulata* and *A. sponsa*) than to the “dabbling ducks.”

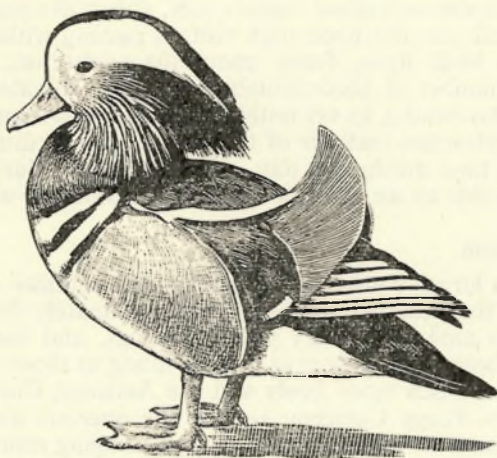
The final part of this shipment—from Salt Lake City—was not despatched until the spring and included the Australian Grey Duck (*Anas superciliosa rogersi*), some more Cinnamon Teal, two male Lesser Scaup (*Aythya affinis*) and a further bunch of the delightful little Ruddy Ducks.

Bewick's Swan

The collection now contains all the kinds of swans in the world except the very rare Trumpeter Swan (*Cygnus c. buccinator*) of North America and the doubtfully distinct Jankowski's or Eastern Bewick's (*Cygnus columbianus jankowskii*), which is said to be slightly larger than the typical Bewick (*Cygnus columbianus bewickii*). One of the latter subspecies came to the collection in

a most interesting way. In the early morning of 3rd November, 1948, seven wild swans were seen leaving the Rushy Pen. On the same evening six swans were back—three adults and three immatures—and in the fading light they were identified as Whoopers (*Cygnus c. cygnus*). On the following day two immatures were shot at Frampton, but the specimens were not examined, and subsequently four *adult* wild swans were seen flying over the Dumbles. From 5th November onwards one swan was constantly on the Dumbles and came regularly to the pond in the Rushy Pen. At first it was taken to be a Whooper—especially as the bill pattern was still in process of development as the bird was only 18 months old. Later, however, it became evident that the bird was a Bewick's. It will never be known whether all seven swans were Bewick's and, if so, why the single one separated from the rest. The issue is further confused by a report of a single swan seen on the Dumbles on some date before 1st November, but the date cannot be confirmed with certainty.

By 23rd November the swan had become so tame that it was possible to drive it into a V of netting, catch it and cut the feathers of one wing. Thus the Bewick's Swan is available in the collection for comparison with the Whooper, Whistling and Mute Swans and, of course, the three species from the southern hemisphere.



Mandarin Drake

Wild Birds in the Pens

One of the most delightful developments in the collection has been the visits of wild ducks to the pens and the way in which, in a surprisingly short time, they have become completely tame and will even fly up to one's feet to be fed. Apart from the Bewick's Swan, perhaps the most striking examples have been the two female Gadwall described on page 10. One of these is now paired to a pinioned drake and the other was caught in a makeshift trap and ringed. She remained as tame as ever after this performance, but the unringed one, although equally tame, is extremely knowing about the trap and refuses to go under its door.

Even more striking are the wild Common Teal which have lived all winter on the Orchard pond. Common Teal are almost the most difficult of all ducks to tame, but in spite of that up to four full-winged ones will remain on this very small pond often with a crowd of 30 people standing within 10 yards of them. One drake is a wild-caught bird which spent a winter on that pond when feather-cut, and grew full wings again in July, but the other three are totally wild birds. The tamest of all is a little female which will come to feed much closer than the pinioned Teal in the collection.

Pintails, and especially drake Pintails, become tame extraordinarily quickly. During the winter there have been about seven or eight wild drakes which lived, to begin with, mainly in the Orchard pond. Later they mostly moved to the Rushy Pen as their principal headquarters and were joined by one or two females. It seems that some, though not all, drake Pintails are subject to a curious and extreme tameness which does not occur so frequently in other species of ducks. Some of these drakes would come to feed within five yards on the day of their arrival. That this is based on a complete ignorance of mankind and his wicked ways seems a more probable explanation than that they should have been previously familiar with friendly humans.

A number of Wigeon have become tame in the Rushy Pen and throughout March, 1949, three pairs were always to be seen there, occasionally taking short flights. One of the females was an exceptionally dark bird. One particular drake, an adult with white shoulders, became the tamest and would fly up to within six or seven feet to feed.

A wild female Tufted Duck (as described earlier) also settled down and remained throughout the season, but oddly enough none of the Pochards which frequented the decoy pool in January ever came regularly to the pens, although odd ones were to be seen there occasionally in the early morning.

Shovelers were also occasional visitors only, although a male remained on the Rushy Pen pond all one afternoon with visitors passing within about 25 yards.

To see these birds flying freely about the enclosures, as well as many Mallards and a number of geese (notably Greylags, Greater Snows, Chinese Swan Geese and Bar-heads), to say nothing of occasional Mute Swans, has been one of the most attractive features of the New Grounds during the past year. There is hardly a time during the day, and particularly during the afternoon, when it is not possible to see wildfowl of some kind on the wing.

The Breeding Season

With a much larger collection the spring and summer of 1948 produced many more nests than the previous year. Unfortunately there was a series of unexplained losses among the very young goslings, and the results from the shipment of eggs from Iceland were as disappointing as those of the year before. But the ducks bred much more freely and the Assistant Curator, Miss Eunice Overend, and Miss Peggy Cameron tackled the onerous work of rearing the young in a most excellent manner, and with encouraging results.

Nests were found of the following 27 species and subspecies :—

Tundra Canada Goose (*Branta canadensis leucopareia*)

Barnacle Goose (*Branta leucopsis*)

Swan × Chinese Goose (*Anser cygnoides*)

Bar-headed Goose (*Anser indicus*)

Blue Snow Goose (*Anser c. caerulescens*)

Greater Snow Goose (*Anser caerulescens atlantica*)

Ross's Goose (*Anser rossii*)

Upland Goose (*Chloëphaga p. picta*)

Egyptian Goose (*Alopochen aegyptiacus*)

Orinoco Goose (*Neochen jubata*)

Cereopsis Goose (*Cereopsis novæ-hollandiæ*)

Australian Shelduck (*Tadorna tadornoides*)

Cape Teal (*Anas capensis*)

Puna Teal (*Anas versicolor puna*)

Bahama Pintail (*Anas bahamensis rubrirostris*)

Common Pintail (*Anas acuta*)

Chilean Teal (*Anas f. flavirostris*)

African Yellow-bill (*Anas u. undulata*)

Mallard (*Anas platyrhynchos*)

Gadwall (*Anas strepera*)

American Wigeon (*Anas americana*)
Chiloë Wigeon (*Anas sibilatrix*)
Carolina Duck (*Aix sponsa*)
Red-crested Pochard (*Netta rufina*)
Rosy-bill (*Netta peposaca*)
Tufted Duck (*Aythya fuligula*)
Scaup (*Aythya marila*)

Eggs were received from Iceland and elsewhere of the following species :—

Common Shelduck (*Tadorna tadorna*)
Common Pochard (*Aythya ferina*)
Barrow's Golden-eye (*Bucephala islandica*)
Eider Duck (*Somateria mollissima*)
Tufted Duck and Scaup

297 young birds were reared (chiefly under foster parents) of the following 18 kinds :—

Swan Goose × **Chinese Goose**¹, **Bar-headed Goose**, **Blue Snow Goose**, **Egyptian Goose**, **Cereopsis Goose**, **Pintail**, **Chilean Teal**, **Yellow-bill** × **Rosy-bill hybrids**, **Mallard**, **Gadwall**, **Carolina**, **Red-crested Pochard**, **Rosy-bill**, **Common Pochard**, **Tufted Duck**, **Scaup**, **Barrow's Golden-eye**.

A small number of eggs was sent to Dr. H. B. Cott at Cambridge University for his research into the palatability of eggs and its relation to the colour of the egg (external and internal), the colour of the parent birds, and the normal nesting site.

Further eggs will be sent during the coming summer.

Fertility Treatment

Ten female Pink-footed Geese and five female Dark-bellied Brent Geese were injected with 200 I.U.s of Pregnant Mares' Serum daily for six days. On the following day, half the number treated were injected with 100 I.U.s of chorionic gonadotrophin, and the other half injected with 200 I.U.s of the gonadotrophin.

In America, 200 F.U.s of Horse Pituitary Gonadotrophin per bird (domestic fowl), were used, but, as this preparation is not available in this country, chorionic gonadotrophin had to be injected in its place.

No ovulation was induced and no other effects of any kind were observed. It seems likely that the infertility is related to the length of daylight rather than to internal or endocrinal derangements.

More information is required in this field, particularly on American work, as there is apparently no record of any research in this country.

When electricity is available at the New Grounds it is proposed to simulate the extended daylight of the northern breeding range with artificial light.

Pathology

Gizzard Worm

During the year five birds have become infested with an internal parasite with fatal results. This parasite is the Gizzard Worm (*Amidostomum anseris*), which is a member of the Order *Strongyloidea*. It occurs in the mucosa of the gizzard, and, less commonly, in the lining of the oesophagus and proventriculus of geese and ducks. The life cycle is direct, and adult birds can be carriers and show no clinical signs of disease. It is said to be very pathogenic to young geese. The clinical signs are weakness, emaciation, anæmia, prostration, and sometimes ataxia and muscular inco-ordination. Treatment with Phenothiazine ($\frac{1}{2}$ to 1 gramme per bird, repeated in one week) has proved very successful provided that the bird can be caught up and dosed as soon as the ailment is detected. In several cases a complete cure has resulted.

1 The domestic Chinese Goose is conspecific with the Swan Goose, from which it was domesticated. These young therefore are not hybrids.

Streptococcal meningitis

During the autumn a Pink-footed Goose developed a curious twisted neck with acute lack of balance. The bird died shortly afterwards and the cause of death was diagnosed as streptococcal meningitis. A second Pink-foot showed the same symptoms, and was immediately treated with penicillin, injected subcutaneously in massive doses for about three days. The progress of the disease was immediately arrested and the bird began to recover very slowly. The brain had, however, apparently sustained permanent damage, and the bird has not become quite normal, and does not appear now to be improving. It walks with a slightly staggering gait and a characteristic wobble of the head. However, it can lead a perfectly normal existence. For some time the disease delayed its moult, but it has now grown new flight feathers. In spite of that it evidently dare not take flight. It is, however, very tame, feeds well, and keeps its feathers in perfect condition.

Staphylococcal arthritis

This has occurred both in an acute and a chronic form, is more frequent in summer, and takes the form of lameness and swollen "knee" joints. It occurs in any bird, but some species seem to be more susceptible than others, and the degree of susceptibility may depend on the inherent resistance in new arrivals, since these seem most frequently to be affected. In all cases but one very satisfactory results have been shown by high doses of penicillin by injection. 100,000 units have been given daily.

Aspergillosis

Birds are said to be infected by inhaling spores of a fungus (*Aspergillus* Sp. *A.fumigatus*, *A.glaucus*, or *A.nigrescens*) in mouldy litter or food. The fungus attacks the lungs, air spaces and sometimes other organs in the body cavity. The only species affected during the last year have been Common Eider and Carolina Ducks and in the previous year, Dark-bellied Brent Geese and European Wigeon. It will be noted that three of the four species commonly frequent salt water. No cure for this mycosis has been discovered.

Feather Plucking

A male Red-breasted Goose has developed broken feathers all over the breast, back, wings and tail. The feathers have been microscopically examined and no signs of Feather-eating Mite were discovered. It is noticeable that only those feathers which can be reached by the bird's bill are affected. It seems possible that the condition is akin to feather plucking in parrots or nail-biting in human beings.

Wet Feather

Two of the three Australian Grey Teal have developed "Wet feather," a condition which is fairly common in some waterfowl collections but is so far unexplained. Parts of the bird, usually the after parts (and again those which can be preened by the bird's bill), become no longer waterproof. The condition is not usually fatal unless the bird finally catches pneumonia. Some deficiency in diet may be the cause, or a failure of the preen gland to supply sufficient feather oil. Birds often recover and are perfect again after the moult.

Psychology

Studies are being made of two interesting cases ; a male Lesser White-front and a male Blue Goose. The Lesser White-front was reared by hand in Lapland in 1938 in company with its sister. The two birds were brought back by Major Gavin Maxwell and lived in Scotland until the end of the war. They never bred and by 1944 the male had become belligerent with certain humans. In 1945 the female died and the male took up with a party of Tundra Canada

Geese and was fairly well paired with a female of that race. He was separated and put in the Orchard Pen with a female of his own species, but within a few days it was noticeable that he always sat near a brooder in which some young bantams were being reared. In due course the bantams were removed and the bird remained faithful to the brooder—a large box, about 4 ft. \times 3 ft. \times 3 ft. high. The bantams had been under the charge of our keeper Mr. Cameron, and when in due course the brooder was removed the fixation was transferred to Mr. Cameron. The Lesser White-front will follow him round the pen whenever he comes into it. This has nothing to do with food as he will not take food, but keeps within a foot or two of Mr. Cameron's feet wherever he goes. When he leaves the pen the bird will stand by the gate he went out by, waiting for his return. This fixation was well established by January, 1948, and throughout the summer the bird paid no attention to the female in the pen, but he took under his protection six young Chinese Geese which were put into the pen to keep the grass down, and a few weeks later he took charge of a young Blue Goose and two young Bar-headed Geese which were substituted for the now grown Chinese. But, when these also were moved on, the little gander gave all his attention once more to Mr. Cameron. He dislikes women and often attacks those he knows well (Miss Overend and Miss Peggy Cameron, both of whom usually wear trousers). There have been occasional indications of a minor transference of his fixation for the Director or for the Curator, Mr. Yealland. On occasions he will follow them, but never so devotedly as he follows Mr. Cameron. One very interesting circumstance, however, is that a certain Mr. White, who lives not far away, has visited the Trust four or five times during the last year. On each occasion the Lesser White-front has made straight for him and has stayed with him devotedly until he leaves the pen. Mr. White bears no resemblance to Mr. Cameron whatever, being dressed quite differently and not being so tall. It is proposed to carry out further experiments.

The Blue Snow gander was sent to us as a present on 6th April, 1949, by Col. W. V. Lumsden of Sluie, Banchory, Scotland. It was released in the Big Pen and wandered to the far end, where, by next morning, it had attached itself firmly to one (the largest) of a number of kennel-type nesting boxes (3 ft. \times 2 ft. 6 in. \times 2 ft. 6 in. high). This he protected in the same way as a gander normally protects a sitting goose. He never left it and wore the grass down walking round it. He also nibbled at the edges of the roof of the box, peeling off the roofing felt and gnawing at the wood. It was decided to move the box nearer to the headquarters in order to study this fixation. The first time it was picked up he rushed away in alarm. It was moved about 30 yards away and he took up with it again. The next day it was moved another 30 yards and placed on top of a low bank. This time he rejoined it almost at once but walked round it in a suspicious way about 10 yards away before going up to it with the greeting calls and movements. Ten minutes later it was moved about 70 yards. It was now placed near the pond and beside a small ditch where a number of other geese were sitting (including four female Blue Snow Geese without any gander). He walked up towards the box, then was side-tracked by a quarrel with some Greater Snow ganders. He then walked round the box at 10 yards and did not rejoin it, but walked back to where it had been, passing a flat-roofed box on the way, and went straight to a much smaller kennel-shaped box on the side of the low bank. Suddenly he was attacked over the bank by a gander Ashy-headed Goose. The surprise caused him to flee for about 10 yards, then he turned and counter-attacked and a very fierce fight ensued, lasting about two minutes, at the end of which the Blue gander was defeated. The box was then moved back about 30 yards to the open grass again as it was intended to carry out further experiments, and we did not wish the fixation to be transferred to another box further down the field again. He was then gently driven towards

the box and reattached himself at once. Since then the box has been moved several times short distances, so as to bring the bird into a convenient position for observation. It was noticed that the bird joined it much more quickly if it was orientated in the same way as it had been. When the box was inverted the bird left it immediately, evidently considering it to be dead. He took up with a pair of Coscoroba Swans (*C. coscoroba*). After 36 hours the box was resuscitated. The bird was then torn between the swans and the box and ran backwards and forwards between the two for a day. He then took to the box again. This was later tipped at an angle of 45 degrees and the bird continued to defend it in exactly the same way as a normal gander defending a sitting goose. Further experiments are being carried out. Col. Lumsden has been kind enough to send us the following note: "The Blue gander was reared by a hen and he was rather a nuisance here with the hens, even entering the hen-house and pulling them off the nest."

A number of other interesting fixations have been noted and it is proposed to make further studies. A pair of Blue Snows were joined in the autumn by a young full-winged female which was their offspring, but they did not know it as it had been reared under a hen. In the spring the Blue gander became attached to the young female, although, of course, she was only 10 months old and Blue Geese do not come into breeding condition until their third year. The three birds still kept together, but the gander gave all his attention to the young female and drove off his own mate whenever she came too close. On the day before the old goose laid, the gander appeared to lose interest in the young bird and next morning it had flown out of the pen. The nest was not made until that morning, but by evening the first egg had been laid in it. Three of the five eggs proved fertile.

LIST OF BIRDS IN COLLECTION

- Magpie Goose** (*Anseranas semipalmata*).—One; female, originally imported from Australia, which survived the war in Major G. Maxwell's collection in Scotland.
- Plumed or Eyton's Whistling Duck** (*Dendrocygna eytoni*).—A pair from Taronga Park Zoo, Sydney.
- Fulvous Whistling Duck** (*Dendrocygna bicolor*).—Six; from Colombia via New York. They will be "full-winged" after the moult in August.
- Black-billed Whistling Duck** (*Dendrocygna arborea*).—Two; a pair, the female from Mr. W. J. Mackensen of Pennsylvania and the male, in exchange, from the London Zoo—a pre-war bird which may be too old to breed, but is very tame and feeds from the hand.
- White-faced Whistling Duck** (*Dendrocygna viduata*).—One; probably a male, from Bronx Zoo, New York, in exchange.
- Grey-breasted Whistling Duck** (*Dendrocygna autumnalis discolor*). Six; four from South America via Holland, through the courtesy of Mr. A. F. C. A. van Heyst of Amersfoort. Two from Colombia via New York in exchange. One of these last is a young bird.
- Coscoroba Swan** (*Coscoroba coscoroba*).—Four; one pair from South America in August, 1947, via Holland by the courtesy of Mr. A. F. C. A. van Heyst of Amersfoort, which built a large nest in March, 1949, but deserted it: one pair from South America via New York in December, 1948.
- Whistling Swan** (*Cygnus c. columbianus*).—Four; an adult pair and an 18-month-old pair as a present to the Trust from the Delta Waterfowl Research Station, Manitoba, Canada.
- Bewick's Swan** (*Cygnus columbianus bewickii*).—One, which flew in on or about 3rd November, 1948, and is now part of the collection (see page 30).
- Whooper Swan** (*Cygnus c. cygnus*).—One; a female (?) ("Daisy"), from Leckford. Very tame and feeds from hand.

- Black-necked Swan** (*Cygnus melanocoryphus*).—Four ; cob reared at Leckford, pen reared by Mr. D. G. Schuyt, Rotterdam ; pair from South America via New York. None old enough to breed yet.
- Mute Swan** (*Cygnus olor*).—Seven ; five oiled in Sharpness Docks, two damaged by telegraph wires. Several others usually present which have flown in.
- Black Swan** (*Cygnus atratus*).—One ; a pen reared at the New Grounds from an egg from Kew Gardens.
- Canada Goose** (*Branta c. canadensis*).—Two ; both ganders, from Whipsnade in exchange.
- Central or Todd's Canada Goose** (*Branta canadensis interior*).—Three ; a pair from the Delta Waterfowl Research Station, Manitoba, and a female, doubtfully of this race, from Mr. W. H. Lemburg, Nebraska.
- Great Basin Canada Goose** (*Branta canadensis moffitti*).—One ; gander from Mr. O. Wells of Sardis, British Columbia.
- Lesser Canada Goose** (*Branta canadensis parvipes*).—One ; from the Delta Waterfowl Research Station, Manitoba, where it was wing-tipped.
- Western Canada Goose** (*Branta canadensis occidentalis*).—Eight ; one old gander imported before the war. A pair and a young female from Mr. O. Wells, British Columbia ; two pairs from Mr. J. Livermore, Connecticut. These last are smaller, and Mr. Wells' three are not so dark. It seems that three different populations of this race are represented.
- Tundra Canada Goose** (*Branta canadensis leucopareia*).—Seven ; possibly one gander and six geese. Five of them bred by Mr. A. Ezra in England in 1941. Two from Mr. L. J. Graves in the State of Washington, U.S.A. One pair nested 1948 and will nest 1949.
- Richardson's Goose** (*Branta canadensis hutchinsii*).—One ; as a gift from the Delta Waterfowl Research Station, Manitoba, Canada.
- Cackling Goose** (*Branta canadensis minima*).—Four ; two pairs ; an old female originally from Mr. J. C. Laidlay, Scotland, a gander from Dr. Dillon Ripley as a gift, and a pair hand-reared by Mr. D. G. Schuyt in Holland in 1947, in exchange.
- Barnacle Goose** (*Branta leucopsis*).—Seven ; two breeding pairs, originally wild-caught on the Solway Firth in 1937. Three young birds.
- Light-bellied Brent Goose** (*Branta bernicla hrota*).—Three ; from Wexford Harbour (wing-tipped birds), sent by Mr. J. Colloton of Curraclloe through the courtesy of Dr. C. L. Flood of Dublin Zoo.
- Dark-bellied Brent Goose** (*Branta b. bernicla*).—Nine ; all originally wild-caught on the Wash.
- Pacific Black Brant** (*Branta bernicla nigricans*).—Four ; two pairs from Mr. L. J. Graves of Kent, Washington, U.S.A.
- Red-breasted Goose** (*Branta ruficollis*).—Thirteen ; two wild-caught from Moscow in 1938 (at the Lighthouse at Sutton Bridge before the war) ; the rest hand-reared either at Woburn or Leckford. Three odd ganders.
- Swan Goose** (*Anser cygnoides*).—Two ; both ganders. [Three Swan Goose × Domestic Chinese cross, reared last summer, which are being bred back with one of the wild males.]
- Bean-Goose** (*Anser a. arvensis*).—One ; female, reared by Mr. F. Mosford in 1942 in Cheshire.
- Tundra Bean-Goose** (*Anser arvensis rossicus*).—One ; a female, possibly of this race (or possibly *A. a. arvensis*), wing-tipped in Hungary in 1936 and formerly at the Lighthouse at Sutton Bridge.
- Pink-footed Goose** (*Anser arvensis brachyrhynchus*).—Eight ; three pairs and two of sex unknown, one (wing-tipped) from Mr. A. Bentham of Bradford. The rest wild-caught on the Wash. One which suffered from meningitis was saved by penicillin.

- White-fronted Goose** (*Anser a. albifrons*).—Seven ; four ganders, three females. A pair reared by Mr. W. G. Tinsley in Lincolnshire, one wing-tipped in Hungary, 1936, remainder picked up locally with minor injuries, now cured.
- Greenland White-fronted Goose** (*Anser albifrons flavirostris*).—Eight ; one pair reared in Greenland and sent through the Copenhagen and London Zoos. Six captured by Mr. J. Colloton of Curracloe, Co. Wexford, and sent through the Dublin Zoo.
- Lesser White-fronted Goose** (*Anser erythropus*).—Six ; two ganders, four geese. One (Jacobi or "Kishy") reared in Lapland and sent to Major G. Maxwell in Scotland. (This bird has an attachment for Mr. Cameron, the keeper.) Two females from the Lighthouse at Sutton Bridge, 1937, and a pair and a female reared by Mr. D. G. Schuyt in Holland in 1947.
- Greylag Goose** (*Anser a. anser*).—Seven ; three ganders, four geese. One wing-tipped on Solway Firth by Mr. James Robertson Justice. Two females reared by Mr. A. W. S. Dean of Grantham. Two ganders reared from North Uist eggs and given by Miss H. Beamish, and two, probably females, reared last season from wild-hatched Scottish goslings. All these were presented to the Trust. All are full-winged and most of them feed from the hand.
- Eastern Greylag Goose** (*Anser a. rubrirostris*).—Six ; three from the Calcutta Zoo through the courtesy of Dr. Dillon Ripley of Litchfield, Connecticut, U.S.A., and three, one of which is full-winged, from Mr. R. Angorly of Basra, reared at Margil. All very tame ; one pair expected to breed.
- Bar-headed Goose** (*Anser indicus*).—Five ; three ganders, two geese, all bred from stock originally imported from India by Mr. A. Ezra, and kept in Scotland during the war by Major G. Maxwell. One breeding pair. Two full-winged, the gander of one pair and the goose of the other.
- Emperor Goose** (*Anser canagicus*).—Seven ; five ganders and two geese. Three from Leckford, one from the Duke of Bedford at Woburn, one from Clères (called Clara) and two from Major G. Maxwell at Monreith. Only one female is old enough to breed in 1949 (she began to lay 1st May). All are very tame and feed from the hand.
- Lesser Snow Goose** (*Anser carulescens hyperboreus*).—Five ; a pair by courtesy of Dr. Dillon Ripley and three brought from Canada by Col. Niall Rankin.
- Blue Snow Goose** (*Anser c. carulescens*).—Eight ; two ganders, six geese. One reared New Grounds, 1948. One breeding female presented by Dr. John Berry ; two presented by Mr. H. Whitley of Paignton Zoo, and one gander by Col. W. V. Lumsden. A pair from Major G. Maxwell and a female in exchange from Leckford.
- Greater Snow Goose** (*Anser carulescens atlanticus*).—Twelve ; all from Leckford stock except one female imported from America in 1938 by Mr. A. Ezra at Foxwarren. Two breeding pairs, two odd females and six young not yet of breeding age.
- Ross's Goose** (*Anser rossii*).—Six ; five from Major G. Maxwell at Monreith, originally in Mr. A. Ezra's collection at Foxwarren Park. Two breeding pairs, one odd female now mated to a gander reared at New Grounds in 1947, and therefore probably too young to breed till 1950.
- Ruddy Shelduck** (*Tadorna ferruginea*).—Four ; two pairs, one male in exchange from Bristol Zoo, one female in exchange from Whipsnade ; this pair has nested for the first time in 1949. One male, by courtesy of Dr. Dillon Ripley from the Calcutta Zoo, and one female bred by Mr. Hamilton Scott at Ipswich.
- South African or Cape Shelduck** (*Tadorna cana*).—One ; a male reared at Leckford in 1948.
- Australian Shelduck** (*Tadorna tadornoides*).—Three ; a male on loan from Leckford, a female from the London Zoo and another female from Leckford in exchange, reared in 1948 and too young to nest. The old female laid in 1948 but only two eggs, both infertile.

- Paradise or New Zealand Shelduck** (*Tadorna variegata*).—Three ; a breeding pair nesting for the first time in 1949 (drake from Mr. H. Scott, duck from Whipsnade reared in 1945) and a very old drake from Leckford.
- Common Shelduck** (*Tadorna tadorna*).—Two ; a pair, both reared in 1947, the drake at the New Grounds from a local egg and the duck by Mr. B. May in Essex. Twenty-eight ducklings were reared at the New Grounds during the summer of 1948.
- Egyptian Goose** (*Alopochen aegyptiacus*).—Five ; a breeding pair, female from Leckford, male presented by Captain R. G. W. Berkeley ; one female of their sixteen 1948 offspring reared on the New Grounds ; a pair of the grey form, from Mr. W. J. Mackensen, Pennsylvania, in exchange.
- Orinoco Goose** (*Neochen jubatus*).—Two ; female (a pre-war bird), which lays two clutches each year, from Major G. Maxwell at Monreith. Now recovered from compound dislocation of leg. Male from Philadelphia Zoo in exchange. Unfortunately she does not like him, and the 1949 first clutch is again infertile.
- Abyssinian Blue-winged Goose** (*Cyanochen cyanopterus*).—Four ; two pairs, all from Leckford stock. Both males too young to breed in 1949.
- [**Andean Goose** (*Chloephaga melanoptera*).—Two hybrids between this species and the Upland Goose (*C. p. picta*), a pair, the male reared on the New Grounds, the female at Leckford.]
- Ashy-headed Goose** (*Chloephaga poliocephala*).—Three ; a pair, the male from Major G. Maxwell, the female reared at Leckford in 1947 ; another Leckford female of 1948.
- Ruddy-headed Goose** (*Chloephaga rubidiceps*).—Four ; two pairs, one pair as a gift from Mr. A. Ezra, the other from Leckford. One pair should breed 1949.
- Upland or Magellan Goose** (*Chloephaga p. picta*).—Three ; a pair, the male from Chester Zoo, the female and another odd female from Major G. Maxwell.
- Barred Upland or Chilean Goose** (*Chloephaga picta dispar*).—Four ; two pairs, all from the Duke of Bedford at Woburn.
- Cereopsis or Cape Barren Goose** (*Cereopsis novæ-hollandiæ*).—Seven ; three pairs and an odd female. One pair presented by Mr. H. Whitley of the Paignton Zoo. One male by Mrs. Edgar Smith. The rest are offspring of the Paignton pair, which lay two clutches each year starting just after Christmas.
- Marbled Teal** (*Anas angustirostris*).—Nine ; four pairs and an odd drake, all from Basra during the summer of 1948 as a gift from Mr. R. Angorly. It is 30 years since this species was kept in Britain.
- Cape Teal** (*Anas capensis*).—Six ; three pairs from Leckford, except for one drake in exchange from Sir Derek Ryan, Bt. Nested in 1948 and 1949.
- Versicolor or Grey Teal** (*Anas v. versicolor*).—One ; a female from South America via New York. (This may belong to *A. v. fretensis*.)
- Puna Teal** (*Anas versicolor puna*). Three ; a drake and two ducks, reared at Leckford in 1947. Nested in 1948 and 1949.
- Southern Bahama Pintail** (*Anas bahamensis rubrirostris*).—Eight ; four pairs. One drake reared by Mr. R. Pilcher, at Boston, and presented by him ; one drake from Sir Derek Ryan, Bt., in Suffolk and the rest from Leckford.
- Chilean or Brown Pintail** (*Anas georgica spinicauda*).—Seven ; three pairs and an odd female. One male presented by Mr. F. L. Felton, four females from Sir Derek Ryan, Bt., and two males from Leckford.
- Common Pintail** (*Anas acuta*).—About 43 ; five full-winged. Hand-reared stock based on a brood presented by Mr. A. W. S. Dean of Grantham in 1947, and a number from Sir Derek Ryan, Bt. Many wild caught from Borough Fen and Orwell Park Decoys.
- Chilean Teal** (*Anas f. flavirostris*).—Seven ; three pairs and an odd drake from South America via New York. One female was presented by Mr. F. L. Felton and one male by Sir Derek Ryan, Bt., the rest being from Leckford.

- Common Teal** (*Anas c. crecca*).—Six ; two females reared by Mr. W. H. Payn of Bury St. Edmunds, the rest wild caught in Borough Fen Decoy including one full-winged drake which lives in the Orchard.
- American Green-winged Teal** (*Anas crecca carolinensis*).—Twelve ; five pairs and two odd drakes. From Mr. W. J. Mackensen of Pennsylvania, and from the Tracey Aviary, Salt Lake City, through the courtesy of Mr. J. Sloan.
- Baikal or Formosa Teal** (*Anas formosa*).—Two ; a pair as a gift from Mr. Jack Livermore of Connecticut.
- Falcated Teal** (*Anas falcata*).—One ; a drake presented by Mr. R. Parker-Jervis, originally from Col. W. V. Lumsden at Sluie, Banchory, Scotland.
- Australian Grey Teal** (*Anas gibberifrons mathewsi*).—Three ; a pair from Mr. A. Ezra and a female from Mr. F. Grant of Leicester, as gifts in each case.
- Chestnut-breasted Teal** (*Anas castanea*).—One ; a drake as a present from Col. W. V. Lumsden of Sluie, Banchory, Scotland.
- Mallard** (*Anas p. platyrhynchos*).—About 100 ; almost all reared at the New Grounds during 1948 and full-winged. Some presented through the courtesy of Mr. K. N. Beach. Have bred freely in spring, 1949.
- Florida Duck** (*Anas f. fulvigula*).—Four ; two pairs from Messrs. Davis and Gist of Florida, through the courtesy of Mr. Arthur Harlow of New York.
- Mottled Duck** (*Anas fulvigula maculosa*).—Four ; two pairs from Messrs. Davis and Gist of Florida through the courtesy of Mr. Arthur Harlow of New York.
- Black Duck** (*Anas fulvigula rubripes*).—Three ; one drake and two ducks brought by Col. Niall Rankin from Canada. Both females have nested in 1949.
- Burma Spotbill** (*Anas pæcilorhyncha haringtoni*).—Two ; a pair which appear to be of this race, as a gift from Dr. Dillon Ripley of Litchfield, Connecticut.
- Australian Grey Duck** (*Anas superciliosa rogersi*).—Two ; a pair, probably of this race, from the Tracey Aviary, Salt Lake City, through the courtesy of Mr. J. Sloan.
- Philippine Duck** (*Anas luzonica*).—Two ; a pair brought back by Col. Niall Rankin from U.S.A. These are the first of this species ever to be seen alive in Europe.
- African Yellowbill** (*Anas u. undulata*).—Eight ; three pairs and two odd drakes, mostly from Sir Derek Ryan, Bt., at Chattisham Hall, but one from Leckford, and one in exchange from Mr. F. Mosford in Cheshire.
- Abyssinian Yellowbill** (*Anas undulata rupelli*).—Two ; both drakes, as a present from Mr. F. L. Felton. These appear to be the only two of this race left in Europe.
- Gadwall** (*Anas s. strepera*).—Eight ; two reared from eggs sent from Iceland and three reared at the New Grounds, 1948, also a pair and a female (of a possible American form) from Mr. W. J. Mackensen of Pennsylvania. These have been joined by two wild females during the winter of 1948-9.
- European Wigeon** (*Anas penelope*).—About 40 hand-reared ones presented by Col. W. V. Lumsden, wild-caught from the Wash, Borough Fen Decoy and Orwell Park Decoy.
- American Wigeon** (*Anas americana*).—Six ; three pairs, one from Mr. R. Parker-Jervis, one from Mr. W. J. Mackensen of Yardley, Pennsylvania, and the rest from Leckford.
- Chiloë Wigeon** (*Anas sibilatrix*).—Five ; a drake (Tim-Willie) presented by Mrs. Kirkbride from Nyewoods, Southampton, another by Mr. Alex Wilson from Presteigne, a female by Mr. A. Savory and two from Leckford.
- Blue-winged Teal** (*Anas discors*).—Seven ; three pairs and an odd drake, from the Delta Waterfowl Research Station, Manitoba, and from Liberty Park, Salt Lake City, Utah.

- Cinnamon Teal** (*Anas c. cyanoptera*).—Ten ; four pairs and two odd drakes. One as a gift from Lady Ralli at Beaurepaire Park ; one from the London Zoo ; two from the Delta Waterfowl Research Station, Manitoba, others from Mr. W. J. Mackensen of Pennsylvania and the Tracey Aviary, Salt Lake City.
- Garganey** (*Anas querquedula*).—Seven ; three pairs and an odd drake. Three caught in Decoy at New Grounds, rest from Holland through the courtesy of Mr. T. Lebret as a gift from Lekkerkerk Decoy.
- Argentine Red Shoveler** (*Anas platalea*).—One ; a drake, the only specimen in Europe, reared at Chattisham Hall and presented by Sir Derek Ryan, Bt.
- Common Shoveler** (*Anas clypeata*).—Nine ; three pairs and three odd females. All caught in Borough Fen Decoy, near Peterborough.
- Red-crested Pochard** (*Netta rufina*).—Thirteen ; only five drakes. From Leckford, Sir Derek Ryan, Bt., and Mr. A. Savory. All were reared in this country and all came to the New Grounds in exchange.
- Rosy-bill** (*Netta peposaca*).—Six ; all from Leckford stock. Two males kept of the six ducklings reared at the New Grounds in 1948.
- [**Rosy-bill** × **Yellow-bill** (*Anas u. undulata*).—Two hybrid males bred at New Grounds in 1948.]
- Canvas-back** (*Aythya valisneria*).—Four ; two pairs. One drake from Sir Derek Ryan, Bt., the rest reared for the Trust by Mr. Al Hochbaum at the Delta Waterfowl Research Station, Manitoba, and brought to England by Col. Niall Rankin.
- European Pochard** (*Aythya ferina*).—Eight ; five of them drakes. One drake from Mr. A. Savory, a young pair from Sir Derek Ryan, Bt., the rest from eggs from St. James's Park, by courtesy of the Office of Works and Mr. T. Hinton.
- Redhead** (*Aythya americana*).—Six ; two pairs and two odd drakes. All reared for the Trust by Mr. A. Hochbaum at the Delta Waterfowl Research Station, Manitoba.
- Tufted Duck** (*Aythya fuligula*).—Seven ; four of them drakes (one mated to a Scaup female). A pair from Mr. A. Savory ; one from Leckford ; the rest from St. James's Park as eggs, by courtesy of the Office of Works, or by accident as eggs from Iceland.
- Lesser Scaup** (*Aythya affinis*).—Two ; both males, by air from Salt Lake City, by courtesy of Mr. J. Sloan.
- Common Scaup** (*Aythya m. marila*).—Nine ; four pairs and an odd drake, all reared on the New Grounds mostly from eggs sent from Iceland by Mr. W. F. Palsson. Some from eggs laid at the New Grounds.
- Brazilian Teal** (*Amazonetta b. brasiliensis*).—Two ; a pair from South America via New York. Should breed in 1949.
- Maned Goose or Australian Wood Duck** (*Chenonetta jubata*).—Two ; a pair presented by Lady Ralli from Beaurepaire Park. Hatched before 1936, they have never bred.
- Mandarin Duck** (*Aix galericulata*).—Sixteen ; mostly well paired. One drake has dull plumage almost like that of the duck, probably owing to some glandular defect. This species did not breed at all in 1948. The stock is from Sir Derek Ryan, Bt., at Chattisham, the Duke of Bedford at Woburn, Mr. A. Ezra at Foxwarren and Mr. P. W. Ratcliffe at Burton-on-Trent.
- Carolina or Wood Duck** (*Aix sponsa*).—Twenty-four ; mostly well paired. Has bred well in 1948 (33 young birds reared) and 1949. The stock is from Leckford, from Sir Derek Ryan, Bt., and from Col. W. V. Lumsden.
- Comb Duck** (*Sarkidiornis m. melanotos*).—Two ; a pair in exchange from Mr. J. Livermore of Redding, Connecticut, U.S.A.
- Muscovy Duck** (*Cairina moschata*).—Six ; two trios from Mr. J. Livermore of Redding, Connecticut, U.S.A., in exchange. They have laid freely in the spring of 1949.

Spur-winged Goose (*Plectropterus g. gambensis*).—One ; a female from Whipnade in exchange, where it was reared in 1933.

European Eider (*Somateria m. mollissima*).—Four ; one drake, two ducks reared in 1948 and one duck reared in 1947, all by Col. W. V. Lumsden. Eiders are subject to the fungus disease aspergillosis at the New Grounds and drakes seem more difficult to keep than ducks.

Barrow's Golden-eye (*Bucephala islandica*).—Five ; two pairs reared at the New Grounds in 1947 ; one drake in 1948 ; all from eggs sent from Iceland by Mr. W. F. Palsson of Laxardal.

Red-breasted Merganser (*Mergus serrator*).—Two ; females, one reared at the New Grounds in 1947 from an egg sent from Iceland, the other, blind in one eye, was caught in Bude harbour by Mr. R. B. Treleaven.

Goosander (*Mergus m. merganser*).—One ; a drake caught in the outflow of Walton Reservoir, near Hampton Court, in March, 1947. Now paired to a female Red-breasted Merganser.

North American Ruddy Duck (*Oxyura jamaicensis*).—Seven ; three pairs and one drake from Mr. W. J. Mackensen, Pennsylvania, and also from Liberty Park, Salt Lake City, where they were reared by Mr. Calvin Wilson and sent by courtesy of Mr. J. Sloan, Superintendent of Parks.

From this list of 106 different forms and some 654 birds it will be seen that the Trust is greatly indebted to a large number of people who have sent birds to the New Grounds. The Council wishes to thank those (not all of whom are mentioned by name) who have so generously helped to create this fine collection of living waterfowl.

VISITORS

More than 5,000 people have visited the New Grounds during the past year. Eighty-nine parties, arriving in coaches—between 30 and 40 in each party—have been shown round, and 49 of these have been from schools and educational establishments. The Council feels that these figures are of considerable significance and indicate the importance of the Trust's contribution in the educational field.

On 10th February, 1949, H.R.H. The Duke of Edinburgh spent a day at the New Grounds. In perfect weather he saw the wild geese at 30 yards range, watched three Wigeon caught and ringed in the decoy, and spent several hours among the tame birds. Owing to an unfortunate attack of measles, H.R.H. Princess Elizabeth could not accompany Prince Philip as had been planned.

A few weeks later, on 27th March, the Trust was honoured by the visit of H.R.H. Princess Margaret, who spent about two hours at the New Grounds. Although the wild geese had already left, Her Royal Highness crept into one of the huts overlooking the decoy and saw a number of wild Wigeon and Teal at a range of about 10 yards.

Among the distinguished visitors we were glad to welcome a number of leading ornithologists from overseas. These included Dr. Chessex of Switzerland, Mr. Jean Delacour of the American Museum of Natural History, and Dr. Ira Gabrielson, late Director of U.S. Fish and Wildlife Service and now Director of the Wildlife Management Institute of North America.

In addition, many of the leading British ornithologists were able to come to the New Grounds at least once during the winter season (and in most cases saw the Lesser White-fronted Goose).

ACKNOWLEDGEMENTS

In its second year, as much as in its first, the Trust's progress has depended on the support which it has received—both financial and otherwise—from a large number of Members and well-wishers.