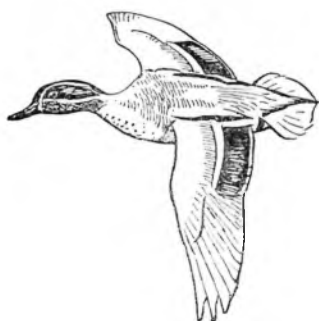


THE FOURTH ANNUAL REPORT OF THE

# SEVERN WILDFOWL TRUST

1950-1951

EDITED BY PETER SCOTT



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# THE SEVERN WILDFOWL TRUST

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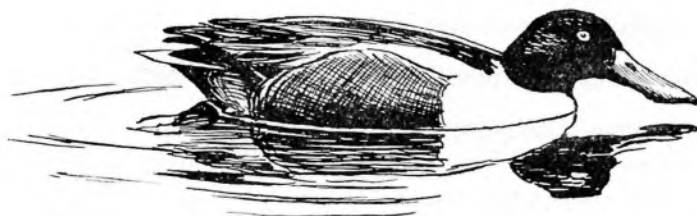
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## REPORT

THE Fourth Annual Report of the Trust's work covers the period from 1st May, 1950, to 30th April, 1951 (the Trust's ornithological year). In the scientific field there have been two important developments. First, wild geese have been caught in the rocket-propelled nets in sufficient numbers for statistical work on goose populations to be undertaken. A total of 691 geese were marked and released, and the experiments yielded interesting data on the technique of colour marking with dyes.

The second important development was the impetus given to the Trust's scientific effort by the visit of Dr. Konrad Lorenz to observe and film the birds in the collection in pursuance of his comparative study of innate behaviour patterns.

Further research has also been carried out on preening, bathing, shaking, stretching and other everyday activities of the *Anatidæ*, and on aggressive behaviour in geese.

A greatly increased catch in the duck decoy was a feature of the autumn season. On 13th September, 1950, a record catch of 145 ducks was run into the West Pipe.

Many new species and races have been added to the Trust's enclosures, and apart from the scientific uses of this unique collection of live waterfowl, it has given pleasure to some 20,000 visitors, many of them from schools and other educational establishments.

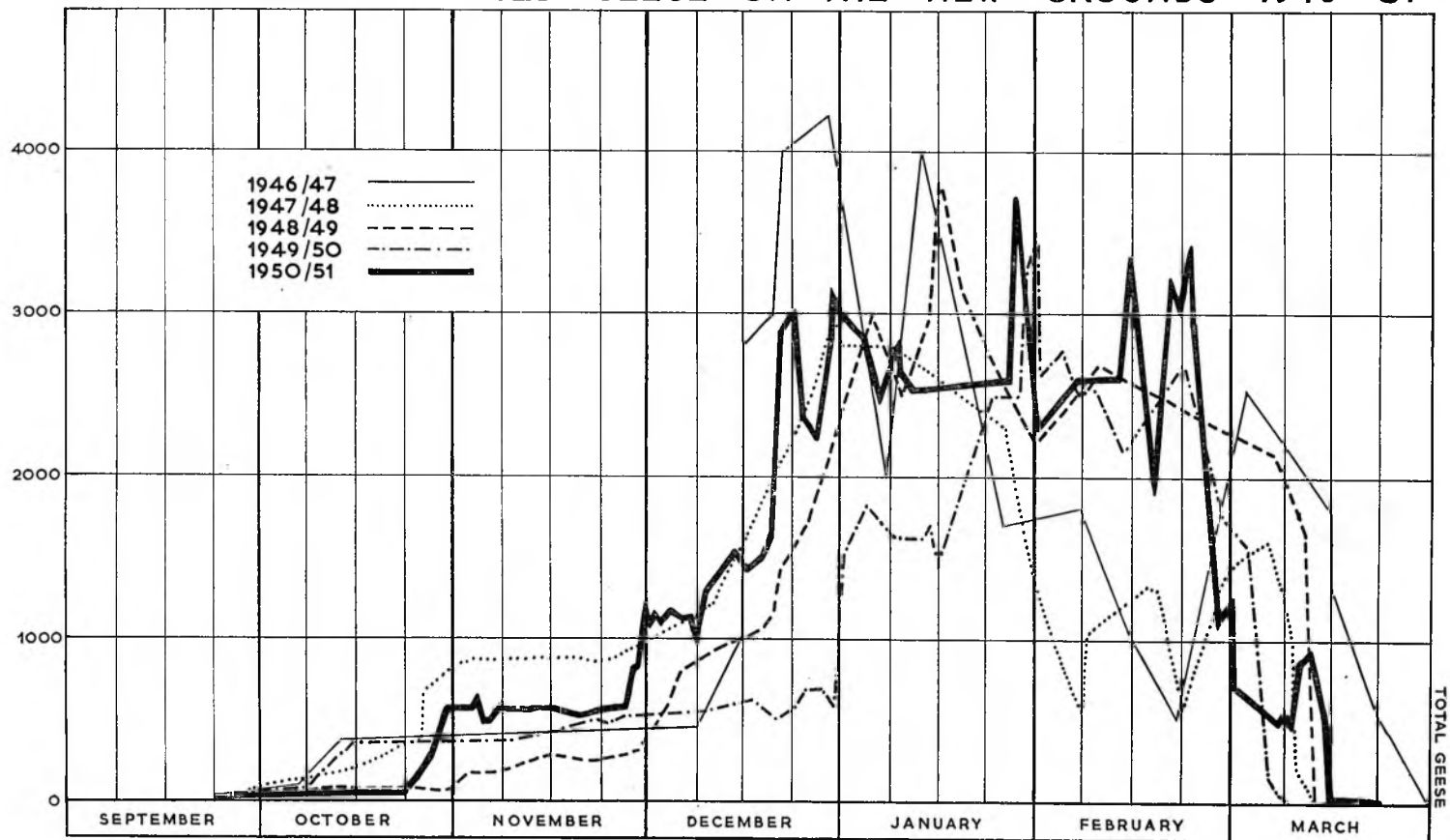
The Trust was represented at the 10th International Ornithological Congress at Uppsala, Sweden. Here and elsewhere in international scientific circles was evidence that the Trust is becoming generally recognized as one of the leading organizations occupied with the world's swans, geese and ducks.

The Key to the Wildfowl of the World, first published in the Second Annual Report, and subsequently reprinted in separate form, has been unexpectedly successful, and Members will be glad to know that a new edition is now available, with extensive corrections which bring it into line with the most recent work on the systematics of the *Anatidæ*.

The total membership at the time of the Annual General Meeting on 28th March, 1951 (reported on p. 55), was 3,830. At the previous Annual General Meeting the total was 3,118 and, in the Council's view, an increase of more than 700 members in the year is extremely satisfactory.

Details of membership are given at the end of this report, on p. 60.

# TOTAL NUMBER OF WILD GEESE ON THE NEW GROUNDS 1946—51



## WILD GEESE

THE first geese arrived on the estuary punctually on 23rd September—a pair, followed by 20 more on the 26th—and the last 15 left the marsh rather later than usual, on 21st March.

Between these dates there were always Whitefronts (*A. a. albifrons*) to be seen on the New Grounds, and from the last week in December until the last week in February, the numbers were between 2,500 and the peak of 3,700.

Only six species and subspecies of geese were recorded this season. Grey Lag (*A. a. anser*) and Brents (*B. bernicla*) did not put in an appearance. On the other hand no fewer than six Lesser Whitefronts (*A. erythropus*) were observed, bringing the British records of this species to 17, of which all but three have been recorded on the New Grounds since 1945. The sixth of this year's birds, which had a wounded leg, spent some weeks in the enclosures and became perfectly tame.

The maximum number of Pinkfeet (*A. brachyrhynchus*) was 63, compared with 62 in 1949 and 58 in 1948.



### PINK-FOOTED GOOSE (*Anser brachyrhynchus*)

Main flock similar in size to that of autumn, 1949, but a number remained until nearly the end of December, an unusually late date (see Table I for details of numbers). After the departure of the flock single birds and small groups appeared, or reappeared, at intervals throughout the winter.

### BEAN GOOSE (*Anser fabalis* subsp.)

One adult with orange on bill limited to a narrow transverse strip seen 17th December (P. S.), 28th December (H. B., P. S.), and 30th December (H. B., P. S.). One with predominantly yellow bill seen 20th December (H. B.).

**TABLE I**  
**NUMBERS OF GEESE**

Date	Pink-footed	Bean	White-fronted	Lesser White-fronted	Barnacle	Total
1950						
Sept. 23rd	2	—	—	—	—	2
„ 24th	2	—	—	—	—	2
„ 26th	22	—	—	—	—	22
„ 27th	26	—	—	—	—	26
Oct. 5th	14	—	—	—	—	14
„ 17th	14	—	3	—	—	17
„ 18th	14	—	—	—	—	14
„ 21st	37	—	3	—	—	40
„ 22nd	37	—	22	—	—	59
„ 23rd	38	—	65	—	—	103
„ 24th	49	—	140	—	—	189
„ 25th	53	—	224	—	—	277
„ 26th	54	—	291	—	—	345
„ 30th	45	—	c490	—	—	c535
„ 31st	44	—	—	—	—	No count
Nov. 1st	54	—	493	—	—	547
„ 2nd	54	—	467	—	—	521
„ 3rd	56	—	480	—	—	536
„ 4th	51	—	537	—	—	588
„ 5th	56	—	429	—	—	485
„ 6th	56	—	422	—	—	478
„ 7th	52	—	463	—	—	515
„ 8th	52	—	487	—	—	539
„ 9th	56	—	475	—	—	531
„ 10th	—	—	—	—	—	c510
„ 11th	52	—	470	—	—	522
„ 12th	56	—	468	—	—	524
„ 13th	—	—	—	—	—	523
„ 14th	56	—	475	—	—	531
„ 15th	57	—	480	—	—	537
„ 16th	57	—	487	—	—	544
„ 17th	56	—	478	—	—	534
„ 18th	50	—	464	—	—	514
„ 19th	56	—	453	—	—	509
„ 20th	58	—	473	—	—	531
„ 21st	42	—	471	—	—	513
„ 22nd	58	—	—	—	—	No count
„ 23rd	—	—	—	—	—	510
„ 26th	54	—	486	—	—	540
„ 27th	51	—	481	—	—	532
„ 28th	58	—	c755	—	—	c815
„ 29th	57	—	1025	—	—	1080
„ 30th	61	—	1100	—	—	1160
Dec. 1st	63	—	c1040	—	—	c1100
„ 2nd	—	—	—	—	—	c1050
„ 3rd	58	—	1057	—	—	1115
„ 4th	57	—	c1020	—	—	c1080
„ 5th	57	—	1065	—	—	1120
„ 6th	57	—	1100	—	—	1160
„ 7th	53	—	1053	—	—	1110
„ 8th	—	—	—	—	—	1120
„ 9th	—	—	—	—	—	1010
„ 11th	57	—	1180	—	—	1240



TABLE I—continued

Date	Pink-footed	Bean	White-fronted	Lesser White-fronted	Barnacle	Total
1950						
Dec. 12th	61	—	1260	—	—	1320
„ 13th	53	—	1370	—	—	1420
„ 14th	52	—	c1450	—	—	c1500
„ 16th	15	—	—	—	—	No count
„ 17th	20	1	1400	—	—	1420
„ 18th	—	—	—	—	—	c1500
„ 19th	c26	—	1660	—	—	1690
„ 20th	28	1	2800	1	—	2830
„ 21st	—	—	—	—	—	2990
„ 23rd	34	—	c2365	1	—	c2400
„ 26th	24	—	c2180	—	—	c2200
„ 27th	25	—	—	—	—	No count
„ 28th	1	1	c2800	1	—	c2800
„ 29th	—	—	c3100	—	—	c3100
„ 30th	1	1	c3000	—	1	c3000
„ 31st	—	—	c3000	—	1	c3000
1951						
Jan. 4th	—	—	c2800	—	1	c2800
„ 7th	—	—	c2430	—	—	c2430
„ 8th	—	—	c2800	—	1	c2800
„ 9th	—	—	2620	—	1	2620
„ 12th	—	—	—	—	—	c2500
„ 26th	6	—	2560	2	—	2570
„ 27th	4	—	c3700	—	—	c3700
„ 31st	2	—	c2500	1	—	c2500
Feb. 1st	—	—	2260	—	—	2260
„ 2nd	—	—	c2350	—	—	c2350
„ 6th	—	—	c2600	—	—	c2600
„ 12th	—	—	c2600	—	—	c2600
„ 14th	—	—	c3300	—	—	c3300
„ 17th	—	—	c2000	2	—	c2000
„ 18th	—	—	1950	—	—	1950
„ 19th	1	—	3140	1	—	3140
„ 20th	6	—	c3000	1	—	c3000
„ 22nd	—	—	3360	1	—	3360
„ 23rd	6	—	2630	1	—	2640
„ 24th	1	—	2290	1	—	2290
„ 27th	—	—	1100	—	—	1100
„ 28th	—	—	c1200	—	—	c1200
Mar. 1st	—	—	712	—	—	712
„ 8th	—	—	490	—	—	490
„ 9th	—	—	552	—	—	552
„ 10th	—	—	c450	—	—	c450
„ 11th	—	—	833	—	—	833
„ 12th	6	—	924	—	—	930
„ 13th	—	—	733	—	—	733
„ 14th	—	—	550	—	—	550
„ 15th	—	—	241	—	—	241
„ 16th	—	—	32	—	—	32
„ 18th	—	—	17	1	—	18
„ 19th	—	—	14	1	—	15
„ 21st	—	—	14	1	—	15

No counts were made on days omitted from the table. The symbol 'c' indicates that the figure given was obtained by estimation, or that some doubt was felt of the accuracy of the count. The numbers are in most cases the mean values of several counts.

**EUROPEAN WHITE-FRONTED GOOSE** (*Anser a. albifrons*)

See Table I for details of numbers. As will be seen from the graph on p. 6, these changes in numbers conformed more closely to the pattern of earlier seasons than in the 'abnormal' season of 1949-50. Sight records of geese ringed in previous seasons were obtained as follows :

3rd December : one ringed on right leg with red ring (i.e., caught 27th February, 1950). No details of family status or individual markings.

8th December : one red-ringed. No details.

16th December : a pair, both red-ringed, without young.

20th December : one red-ringed, paired, but without young.

29th December : one red-ringed, with a family (size not noted).

26th January : one red-ringed. Paired, no young.

5th February : two red-ringed. One paired, no young ; the second accompanied by two juveniles, but apparently without a mate.

6th February : three red-ringed. An adult in a family of four ; and a pair without young.

18th February : two red-ringed, one with white metal ring, right leg. Red-ringed pair as before. White-ringed bird presumably one of fifteen ringed at New Grounds, 18th February, 1948.

20th February : red-ringed pair again.

At least eight different red-ringed individuals were seen. Had it been possible to make satisfactory notes on the appearance of ringed birds on every occasion, this total would probably have been increased. The red-ringed birds were all caught together on 27th February, 1950, when 69 Whitefronts were ringed and released.

The gander known as 'White-eyebrows', seen in the previous seasons, was not found this year.

**GREENLAND WHITE-FRONTED GOOSE** (*Anser a. flavirostris*)

A family of two adults and four young first seen 27th November remained until 11th January at least. On 1st February a party of five, comprising one adult and four young, and thought to be this same family, was 'rediscovered'. They were then seen frequently until 23rd February.

A family of three, seen on 20th December only, included a ringed adult. This bird must almost certainly have been caught in Greenland, as the ring was not of the British pattern and no geese of this form are known to have been ringed elsewhere.

Odd records of birds of this race include two adults on 1st December (in addition to the family of six), one adult, 12th January, and three, apparently all adults, 13th March.

**LESSER WHITE-FRONTED GOOSE** (*Anser erythropus*)

Six individuals, four adults and two first-winter birds, were observed during the season :

An adult, A, seen 20th (H. B.), 23rd (H. B., P. S.) December, 13th January (R. A. F. Gillmor, N. G. B. Jones).

A second adult, B, 28th December (P. S.), 17th February (P. S.).

Single adults, identity not established, 16th January (B. Ashworth), 4th February (P. T. P.), 22nd February (H. B.).

A juvenile, very lame in right leg, 26th January (H. B.), 17th February (P. S.).

A second juvenile 26th January (A. Richardson), 1st February (H. B.), 19th February (H. B.).

Third adult, C, 20th February (W. B. Alexander, G. C. Varley, H. B., P. S.), 23rd, 24th, 25th February (H. B.).

Fourth adult (♀), D, with badly damaged right leg, first seen in Thirty-Acre, 18th March, subsequently attached itself to the grey geese in the Big Pen, where it remained until late May, becoming very tame. No improvement in the condition of its leg occurred during its stay, so that its departure was unexpected.

#### **BARNACLE GOOSE (*Branta leucopsis*)**

A single adult present from 30th December to 11th January.

#### **AGGRESSIVE BEHAVIOUR IN THE WHITE-FRONTED GOOSE**

Observation on aggressive behaviour in the wintering flocks of wild geese, begun in the previous winter, was continued by the Resident Biologist, Mr. Hugh Boyd, from November, 1950, to March, 1951. In the preliminary account of this work given in the Third Annual Report it was described as a study of dominance relationship; but this form of description has been discarded in favour of the more comprehensive 'aggressive behaviour' to indicate that the data being collected are not restricted to those relevant to the hypothesis of dominance.

During the later part of the season attention was concentrated on the incidence of aggressive behaviour in groups rather than on the performance of family units, and it is proposed to develop this line of attack during the coming winter. It will, however, be necessary to continue the collection of information on family behaviour as the data so far obtained are insufficient to establish many results, though the picture to which they give rise is unexpectedly free from anomalies.

Studies of geese in the collection with the object of supplementing the observations on the wild birds have provided quite a lot of information on the ethological aspects of aggressive behaviour, but from the sociological viewpoint, which is being emphasized, it is only too apparent that conditions of captivity affect these activities and give a misleading idea of the natural social organization.

It is likely that at least two more seasons' study will be necessary before the pattern of these complex relations, which is now emerging, can be substantiated.

#### **DISTURBANCE BY AIRCRAFT**

Although pilots were officially asked by their respective Ministries not to fly over the New Grounds, little enough attention was paid to the request, and on days of good flying weather serious observation of the geese was virtually impossible. Once more the geese became for a while largely nocturnal. During the full moon periods of October and November many visitors who had come great distances to see the geese were disappointed, because of the lack of co-operation of both civil and R.A.F. pilots. If it were generally recognized that a minor alteration of course on the part of an aircraft can make, for 50 or more people, the whole difference between the success or failure of an ornithological expedition, perhaps of hundreds of miles at considerable expense, surely more pilots would take the trouble to avoid the area.



On at least three occasions during the season parties who had made the journey by coach from the other side of England saw nothing of the wild geese because of disturbance by a single aircraft.

It seems possible that nothing short of a prohibited area will ever really reduce the low altitude air traffic which causes such serious disturbance to the White-fronted Geese.

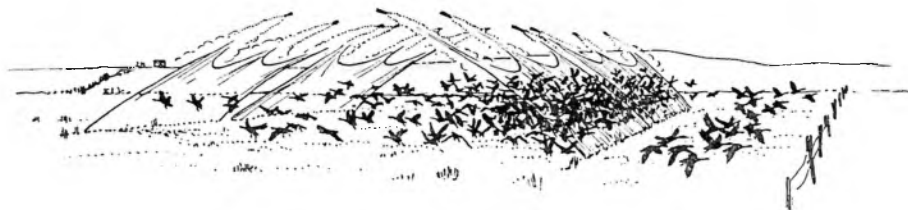
### MARKING OF WILD GEESE

It will be recalled that the first catch of wild geese with special nets propelled by rockets was made on the New Grounds on 18th February, 1948, when 30 Whitefronts and 1 Pinkfoot were caught. For various reasons the development of the technique was very slow and subject to many delays. It was not until 27th February, 1950, that the next catch was made. On that day 71 Whitefronts were caught on the Dumbles, and during March 29 Greylags and 7 Pinkfeet were caught, ringed and released in S.W. Scotland. The first experiments were made in colour marking with dyes, and met with only very limited success.

During the summer the netting and marking techniques were greatly improved, although the methods available for the winter of 1950-51 were still far from perfect. Between 8th and 28th October, 1950, 400 Pinkfeet were caught in Southern Scotland in 14 catches (highest 75, lowest 6, average 28). An expedition to the Wash in December yielded only two catches, but one produced the record figure of 159. In January, in Scotland, three small catches were made (14 Greylags, 13 Pinkfeet, and 14 Pinkfeet). At the New Grounds only two catches were made—4 and 25 Whitefronts, in February; and in March a last expedition to Scotland resulted in three catches—the first of 4 Greylags and 1 Pinkfoot, the next of 79 Pinkfeet and 1 Greenland Whitefront, and the last of 2 Pinkfeet. Thus, throughout the season 691 geese were marked in 24 catches. All these birds were marked with British Trust for Ornithology rings (dyed blue, on the left leg), and most of them were also dyed on the tail and tail-coverts with bright colours, visible in favourable conditions at distances as great as a mile. 643 of the geese ringed were Pinkfeet; the remainder comprised 29 European Whitefronts, 1 Greenland Whitefront, and 18 Greylags. No recoveries of any of these Whitefronts or Greylags have yet been reported.

### Pink-footed Geese

Fifty-eight of the 643 Pinkfeet have so far been recovered, i.e., 9 per cent. of those ringed were killed in the same season as they were caught. The following table of records gives some indication of the local movements of the geese during the winter. Recoveries are mainly birds which have been shot. Numbers in parentheses are sight records of dyed birds; but those noted in the immediate neighbourhood of the ringing area are not included unless the observation was at least a month after the original capture.

**TABLE II—RECOVERY OF PINK-FOOTED GEESE**

(a) Of 378 ringed in south Scotland in October, 1950, 72 have been reported.

Area of Recovery	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	Total
S.E. Scotland .. ..	2	1	1(4)					4(4)
Solway .. ..	(8)	3	3	2(1)	3			11(9)
N. Scotland .. ..				1				1
E. Central Scotland ..	1	2	2(5)	2		4	1	12(5)
N.W. Midlands .. ..	(3)		1	1(1)	1			3(4)
Humber .. ..	1(1)	1	1	2				5(1)
Wash .. ..		1(3)	2(5)	1	1			5(8)
	4(12)	8(3)	10(14)	9(2)	5	4	1	41(31)

(b) Of 160 ringed in the Wash area, December, 1950, 20 have been reported.

Area of Recovery	Dec.	Jan.	Feb.	March	Total
Wash .. ..	4	3	3		10
N.W. Midlands .. ..	1				1
Solway .. ..		3(4)		1 recap. (1)	4(5)
	5	6(4)	3	1 (1)	15(5)

The bird recaptured on the Solway was released again.

(c) Of 27 ringed in the Solway area, January, 1951, one was recovered in the same area in January. Two blue-dyed geese were reported seen in flight near Neumunster, Schleswig-Holstein, on 27th January. These were probably Pinkfeet, in which case they were ringed on the Solway on 21st or 23rd January; but it is possible that they were Greylags, ringed in the same area on 16th January, or that the green dye used in December was mistaken for blue.

(d) Of 78 ringed in the Solway area, March, 1951, one was recovered in the same area in March and another in East Central Scotland at the end of that month.

Full details of individual recoveries are shown on pp. 24-25.

The Council wishes to express its gratitude to those who have given their assistance in various ways to this project, and especially to thank those who granted facilities to the netting team to operate on their land.

Experiments have been carried out with improved equipment and it is hoped that much better results will be achieved during the winter of 1951-52. It should be emphasized that early information about sight records of dyed birds is of great value and should be communicated to the Director at the New Grounds with as little delay as possible.

## NOTES ON COLOUR MARKING OF GEESE

By Hugh Boyd, Resident Biologist

THE first attempts at colour marking geese in February and March, 1950, were based on the findings of Wadkins (*J. Wildlife Manag.* 12 (1948) : 388-391), who concluded that basic dyes in alcoholic solution provided a practical, inexpensive and quick method of marking pheasants for field study. Accordingly we used solutions of Rhodamine B and Crystal Violet on geese captured at the New Grounds and in the Solway area. The results were disappointing: the intensity of colouring was less than expected and very uneven, and fading was very rapid.

This failure led to experiments with other methods, including paints, inks, etc., applied to series of feathers, to tame ducks and to passerines captured for ringing. None of these alternatives appeared preferable to the dye solutions for the purpose of marking geese, but since some promised to be of use on small birds they are commented on briefly here.

### Rejected Methods

1. Quick-drying cellulose paints (supplied by Jenson and Nicholson Ltd., and I.C.I. Paints Division, Slough) provide a series of bright colours, are durable and fairly easily applied to small areas, but they seem objectionable in their effects on the treated birds. It is difficult to prevent bad matting of the feathers at the time of application, and continued observation of passerines marked by this means disclosed that after several weeks some individuals developed 'bald' patches, due to the loss of both the painted feathers and some of those adjacent to them. The cause of this loss was not established. No evidence of increased mortality of painted as compared with unpainted birds was obtained.

2. Artists' oil colours suspended in carbon tetrachloride appeared to produce quite good results on test-feathers and when applied to passerines. Bright colouring, quick drying and durability are the merits of this method. The length of time required to mark large areas and the relatively extravagant use of pigment led to its rejection.

3. Waterproof inks (supplied by Winsor and Newton Ltd., and J. Holden & Co. Ltd.) gave a very limited range of suitable colours (most shades fading badly), lacked intensity, and were slow drying. They would also be expensive to use in quantity.

4. 'Cado Flo-master' waterproof inks (Cushman and Denison Mfg. Co., New York) gave excellent results in respect of brilliance and durability, but the solvent used appeared to affect the feathers so that the cohesion of the webs was lost.

### Use of Dyes

Continued experiments with alcohol-water dye solutions showed them to possess advantages of speed and inexpensiveness, making them the most suitable method yet devised for marking large numbers of large birds with areas of white feathers. The unsatisfactory initial attempts were found to be due to an inadequate method of application and an unfortunate choice of dyestuffs, and better results were obtained by changes in technique and material. The dyes so far tested are Rhodamine B 500, Auramine ON 150, Brilliant Green YN 5,

Victoria Blue BN 150, Methyl Violet 2 BN 200, and Methasol Nigrosine ENS (all supplied by I.C.I. Dyestuffs Division, Huddersfield) ; Crystal Violet and Malachite Green. The original batch of Rhodamine B was found greatly inferior to the type 500 and was discarded. Methyl Violet and Methasol Nigrosine (black) have not yet been used on geese in the field ; but feather tests suggest that Methyl Violet is to be preferred to Crystal Violet because of much greater resistance to water fading. Nigrosine is unlikely to prove very useful. The following table summarises the conclusions reached on the success of the dyes in the field.

Dye	Colour	Initial intensity	Resistance to fading
Rhodamine B .. ..	Crimson to pink	Very good	Good
Auramine .. ..	Yellow	Good	Good
Rhodamine B and Auramine	Orange	Very good	Good
Brilliant Green .. ..	Green	Very good	Fair
Victoria Blue .. ..	Dark blue	Good	Poor
Crystal Violet .. ..	Violet	Good	Poor
Malachite Green .. ..	Green	Fair	Poor

Auramine produces an intense yellow coloration, but is only described as 'good' because it is rather difficult to detect this colour except in certain conditions of lighting. The bright crimson of Rhodamine fades fairly quickly to a shade not certainly distinguishable from that of the orange mixture in unfavourable conditions. The unsatisfactory lasting qualities of Crystal Violet and Malachite Green appear to be due principally to water fading ; Brilliant Green is more affected by sun fading ; and Victoria Blue is badly affected by both sun and water.

#### Preparation of Solutions

All the dyes except Nigrosine are used in a 33 per cent. solution of ethyl alcohol in water (industrial methylated spirit 64 O.P. is a satisfactory alcohol source). Optimum concentrations of each dye have yet to be determined but are of the order of 1-2 oz. dye per gallon of solvent. Attempts to prepare more concentrated solutions may result in the formation of insoluble precipitates, especially in the case of Auramine. The dyestuffs are added to the solvent in the cold. Solutions containing higher proportions of alcohol seem to give no greater initial coloration and tend to wash out more readily. The use of acetic acid in the solvent effects no improvement. Some experiments with wetting agents have been made but the results obtained have been unpromising.

#### Application

In the first field tests the dye was applied by means of a hand spray of the type used for insecticides. This failed to effect a sufficient penetration of the feathers, nor could enough solution be applied. To ensure a thorough soaking of the white parts of the plumage the technique now employed is to immerse the tail coverts of the goose in a bucketful of solution, care being taken to keep the wings dry. After dyeing the birds are placed in portable cages for about fifteen minutes. This allows the dye to penetrate and dry to a considerable extent, improving both the initial intensity and durability of the colouring.

**Visibility of Colours**

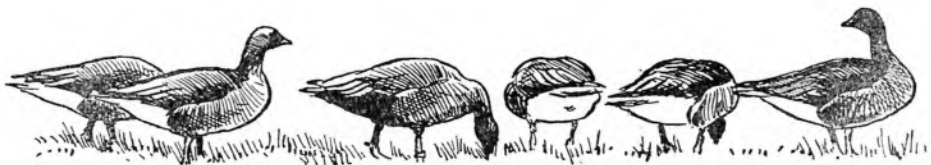
The most unsatisfactory feature of the dyeing method is the great variation in appearance of individuals marked on any one occasion. The causes of this variation are not yet understood, though wetting of the birds while in the nets and fouling play some part. Well-dyed birds have been detected in flight at ranges in excess of a mile and on the ground at half a mile within a few days of being marked. On the other hand some individuals have only been detected with difficulty at less than a hundred yards after a scarcely longer interval. Rhodamine-dyed geese have been recognized in the field at least fourteen weeks after marking and those marked with brilliant green after 13 weeks. Geese in the collection are still recognizably pink over six months after dyeing, though yellow- and green-dyed birds become no longer distinguishable after about four months.

Many of the people who have shot or found ringed birds and reported them have commented on the presence of dyes on the feathers, but a number have failed to note any colour even on birds shot within a few weeks of marking, while a majority of the positive reports have described the colouring as faint. Samples of feathers sent have shown great variation in colour intensity.

**Effects of Dyeing on Birds**

The behaviour of dyed geese has been carefully observed. Immediately on settling after release a great deal of preening of the affected areas takes place, but probably no more than would occur in any bird whose plumage had been drastically disarranged by contact with the nets, handling and wetting. A little dye may be ingested as a result, but is most unlikely to produce any serious effects (the solutions are distasteful but not highly toxic). A high rate of preening may be maintained for one or two days but the return to normal preening is speedy. Our attention has been drawn to the frequency and extent of damage to the tail feathers in dyed geese that have been recovered: it is uncertain whether there is any greater damage in dyed as compared with undyed birds that have been captured and more information is required on this point (which is complicated by the 'normal' severely-abraded state of the tail-feathers in first-winter birds until their renewal in the late winter).

Particular attention has been paid to the social effects of dyeing geese. It appears that for a day or so after capture marked geese tend to remain somewhat isolated. Subsequently many, though probably not all, of the captured birds become reunited with their families. No discrimination between them and their unmarked companions by other members of the flock is apparent. Precise data on conflict-frequency are only available for White-fronted Geese: the rates for dyed individuals fall within the range of variation found for the classes to which the birds belong. Non-quantitative observations on Pinkfeet and Greylags have not provided any evidence of coloured birds being attacked by their neighbours with abnormal vigour or frequency.





## WILD DUCKS

### THE DECOY

#### The Lead

During late August and early September large flocks of Mallards fed regularly, by day as well as by night, in wheat fields to the east of the decoy, one of which had been abandoned uncut because of the wet weather. It was not uncommon to see up to 1,500 ducks milling round over these fields. It was not surprising, therefore, that many of them came to the decoy and on several mornings there were up to 400 birds on the pool, although they seldom remained for more than a few hours, no doubt because of the unavoidable noise and activity round the headquarters which are in this respect regrettably close. Owing to the rains it was possible to obtain spoiled wheat in considerable quantity and the pipes were extensively fed, with excellent results, during September. As in the previous year, however, the 'lead' fell off during October and November, and apart from a spring of 20-30 Teal which frequented the pool during January and February, the numbers of ducks were continuously disappointing after so promising a start.

#### The Catch

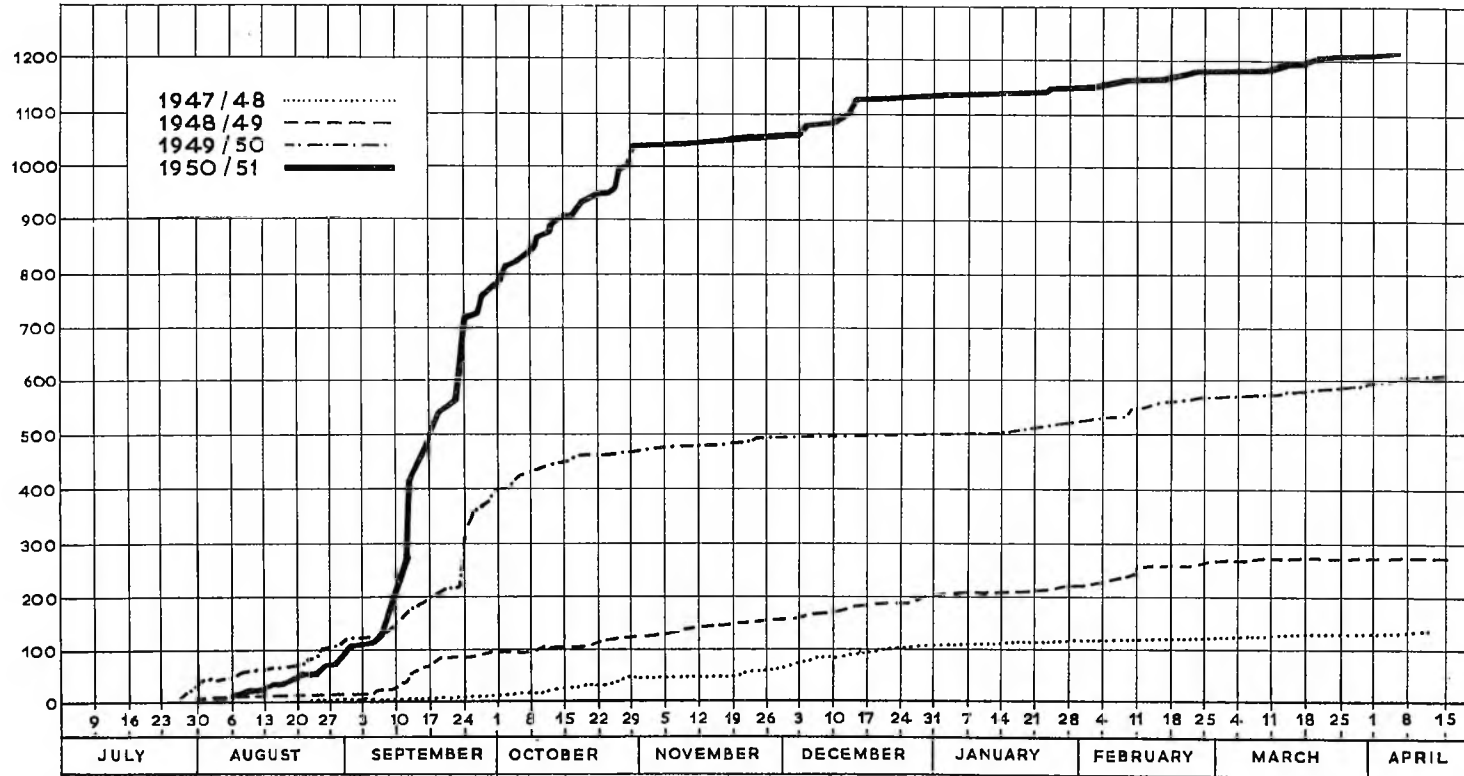
The season's total catch of 1,203 was nearly double that of the previous one (609). Since the decoy was first built in 1843 this total has only been exceeded 3 times (1853-54, 1,410 ; 1861-62, 1,295 ; 1899-1900, 1,273).

The most productive period of the season was during September, 1950 ; the Director's journal reads as follows :

'Work continued in the decoy until the end of July, and thereafter the "lead" was slow in building up. By 13th August there were about 50 birds and by 18th over 80, but this seems to have been a flash in the pan, for at the end of the month there were only 14 mallards although there were 31 teal. These fell off, too, and during the first few days of September only about 30 ducks were to be seen on the pool.

'On 4th September I began feeding the West and South pipes. (Hitherto they had been fed lightly in the mornings only.) For the first night I put one bucket on the running side of each pipe (W. and S.). The "lead" began to increase almost at once. Two days later, on 6th September, there were 73, and on 7th and 8th over 100. On the night of 9th September, C. and I put 1 cwt. of mouldy wheat in the South and West with some in the House and North pipes as well. Next morning there were 286 ducks on the pool, suggesting that perhaps they had smelled the grain—it was hot when put in. Unfortunately, there was an unexplained flush while we were in the North hut and after it only 133 ducks remained. That night another sack went in and next morning, 11th September, we caught 42 in the West and there were 240 ducks still on the pool after the catch. At about 5.30 p.m. we took 62 in the South pipe (not a single recapture) and afterwards about 80 ducks were left on the pool. Thus we had caught 104 in the day—a record. . . . That night we put 5 buckets of fermented wheat in, and next day there were 240 again. Late in the afternoon we took another 42 in the South and did not feed that night at all. On the morning of 13th there were 440 ducks and before breakfast we left 90 ducks in the West as the birds were not properly settled. At about 11.0 a.m. there seemed to be 50 in the West when we spied from the gazebo. We decided to catch them and

# PROGRESS OF TOTAL CATCH IN DECOY 1947-51

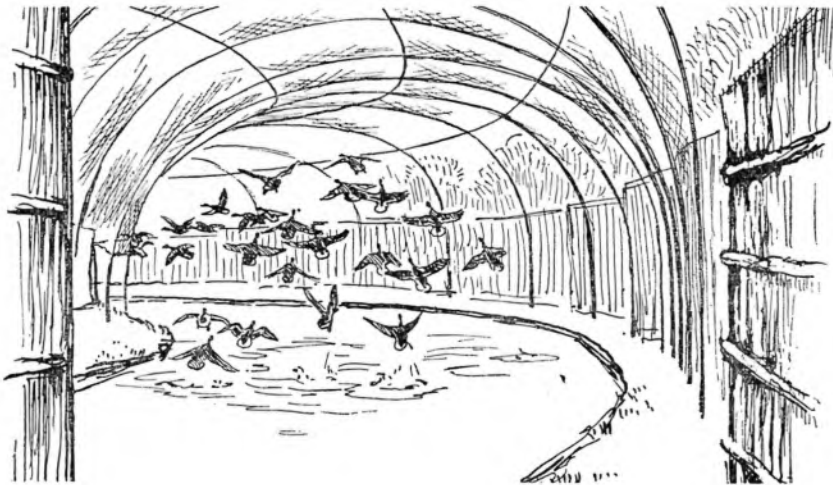


P. and I went round. P. showed. The pipe seemed full, and it took some minutes to get them into the tunnel net. Unfortunately we rose the pool in so doing, but it was obviously a record catch. It took about  $1\frac{1}{2}$  hours to ring them, having herded about a third of them back into the tunnel net taken off the South pipe. The total catch was 145 ducks, and they had pretty well filled the one tunnel net in the first instance. Two wigeon, one teal and the rest mallards (only 11 recaptures). . . . After the catch there were only 70 birds on the pool. For the next two mornings, after night feeding, there were over 200 birds on, but on each day some disturbance put them off in mid-morning. On 16th September (no feed the night before) we caught 50 in the West after breakfast. It did not upset them much, but a tractor backfire rose the pool while we were still ringing. (Only two recaptures, one from last year.) In the afternoon I took 14 more, including five Pintails, and brought the day total to 64. That night and on the morning of 17th September there was a gale and only about 50 ducks on the pool. . . . We caught 32, and on the following day 30, then the pool was rested until 22nd. For two days there had been about 300 on all day and on 22nd there were 410, but they were unaccountably disturbed, leaving under 170. We took 25 in the evening, and next morning, 23rd September, there were about 220. We made simultaneous catches by a new technique in South and West and caught 24 and 55 respectively, but for our 79 we raised the pool. . . . Next morning we did the same again. I went to the South and waited near the show place until I heard the birds flush in the West, then I showed and ran my pipe. My catch was only 14, but the others got 61'.

Thus in two weeks 596 ducks had been caught—only 13 short of the total for the whole of the previous season.

Duck catching at this rate must compare very favourably with the best decoys in this country and even with those in Holland, and not many catches of 145 at one run can have been made in recent years in any decoys. If only the standard could have been maintained through the season! But it was not to be. The thousand was reached as early as 28th October, but the next five months yielded only 203.

The numbers of each species are shown in Table III. For the first season since the decoy was repaired in 1946, no Garganey was taken.



**TABLE III—CATCH AND RINGING FIGURES**

			1946-47	1947-48	1948-49	1949-50	1950-51	Total
Mallard	{	Ringed ..	3	64	102	410	802	1381
		Recaptures ..	—	6	19	71	222	318
		Total catch ..	3	70	121	481	1024	1699
		Recoveries ..	1	8	12	32	*43	96
Teal	{	Ringed ..	2	24	24	56	98	204
		Recaptures ..	—	—	7	2	12	21
		Total catch ..	2	25	31	58	110	225
		Recoveries ..	—	4	1	8	4	17
Wigeon	{	Ringed ..	—	19	52	19	4	94
		Recaptures ..	—	—	20	2	2	24
		Total catch ..	—	21	72	21	6	120
		Recoveries ..	—	5	8	3	—	16
Pintail	{	Ringed ..	—	2	13	17	36	68
		Recaptures ..	—	1	4	5	7	17
		Total catch ..	—	3	17	22	43	85
		Recoveries ..	—	—	1	—	1	2
Shoveler	{	Ringed ..	—	9	26	23	18	76
		Recaptures ..	—	—	—	3	2	5
		Total catch ..	—	9	26	26	20	81
		Recoveries ..	—	6	5	3	1	15
Garganey	{	Ringed ..	1	2	1	1	—	5
		Recaptures ..	—	—	—	—	—	—
		Total catch ..	1	5	2	1	—	9
		Recoveries ..	—	—	—	—	—	—
Total	{	Ringed ..	6	120	218	526	958	1828
		Recaptures ..	—	7	50	83	245	385
		Total catch ..	6	133	269	609	1203	2220
		Recoveries ..	1	23	27	46	49	146

\* The recovery figures will increase with the passage of time. Those shown for 1950-51 represent recoveries in the same season as that in which they were ringed.

**TABLE IV—METHODS OF CAPTURE IN DECOY**

Seasons		Without Dog				With Dog				Total		
		No. of Ducks	No. of Catches	Aver. No. of Ducks per catch	Per cent. of total catch	No. of Ducks	No. of Catches	Aver. No. of Ducks per catch	Per cent. of total catch	No. of Ducks	No. of Catches	Aver. No. of Ducks per catch
1946-47 ..	}	280	148	1.9	68.6	128	33	3.9	31.4	408	181	2.3
1947-48 ..												
1948-49 ..												
1949-50 ..												
1950-51 ..		432	101	4.3	70.8	177	30	5.9	29.2	609	131	4.7
		1119	101	11.2	93.0	84	13	6.5	7.0	1203	114	10.6
Grand Total		1831	350	5.3	82.4	389	76	5	17.6	2220	426	5.2



### STATUS OF DUCKS

#### COMMON SHELDUCK (*Tadorna tadorna*)

No information on size of local breeding population. The population was at a peak in June, with a maximum of 254 on 27th. In the second half of July the adult numbers declined abruptly from 200 on 16th to 45 on 19th, rose again to 218 by 21st, on 23rd fell to 44, and to 6 on 27th, rose temporarily to 41 on 31st, but fell below 20 in early August. These figures accord with current theories that Shelducks perform a moult migration at this period, many of them going to the Heligoland Bight. Few juveniles were seen, 61 on 27th August being the most, and these nearly all left the area in mid-September, so that the population (of both adults and young) totalled less than 20 from late September to the beginning of January. There was a gradual increase in January and February to about 80 birds, at which level the population remained until the third week of April when a rapid increase took place (from 68 on 22nd to 210 on 24th).

#### PINTAIL (*Anas acuta*)

Numbers seen on the river during the winter smaller than in the previous season : highest counts 127 on 30th December, 90, 6th February. Full-winged birds in the pens and the decoy exceeded 50 on several occasions, but included some hand-reared birds.

#### TEAL (*Anas crecca*)

Numbers on river in autumn and early winter comparatively small, increasing to 550 by 10th December and remaining high until the beginning of April, with c.1100, 16th February, and 960, 11th March, the highest counts. Most numerous in the decoy in late January and February (maximum 65 on 22nd January).

#### MALLARD (*Anas platyrhynchos*)

As in previous years, abundant on river and in decoy in autumn but comparatively few present after mid-December. Highest counts on river 1250, 29th August, c.1350, 10th September : in decoy, c.430, 13th, and c.380, 22nd September. After mid-December not more than 150 on river and 60 in decoy.

**GADWALL (*Anas strepera*)**

Some undoubtedly wild birds in pens during winter, but presence of a number of full-winged hand-reared birds prevented adequate recording of numbers. Six, 31st December, most probably wild.

**WIGEON (*Anas penelope*)**

Up to 1250 (31st December) on estuary November to January : few at other times. Very few seen in decoy this season, 12, 1st February, the most.

**GARGANEY (*Anas querquedula*)**

A male in decoy 26th and 27th May, 1950 ; a female in pens 2nd to 11th September ; a pair in decoy 12th April, 1951.

**SHOVELER (*Anas clypeata*)**

Seen on estuary from mid-August to early April, 20, 13th August and 13th October, the most. Despite the presence of some hand-reared birds, not so numerous in decoy as in previous season, 25 on 18th October the maximum and numbers subsequently very small except for 19-21 in first week of December.

**POCHARD (*Aythya ferina*)**

Seven (six males) on river 10th January. One male in decoy, 19th February.

**TUFTED DUCK (*Aythya fuligula*)**

One on river 16th February. One in decoy 26th September, 23rd and 24th October, (♂) (subsequently in pens) mid-November until following summer (caught and ringed 26th December) ; another ♂ 5th February.

## RINGING AND RECOVERIES

As in previous years the Trust has carried out its ringing activities for the Wildfowl Inquiry Committee and both ducks and geese have been available to the Committee's Duck Adoption Scheme. The standard British Trust for Ornithology rings were used, carrying the address of the British Museum of Natural History, London.

The most important recoveries have been the 4 Whitefronts reported from Russia. Three of these were from known breeding grounds of the species—the Island of Kolguev and the Kanin Peninsula, both to the east of the White Sea. The fourth, however, was much more unexpected. Ringed, with the others, at the New Grounds at the end of February, it was recovered near Kursk in Southern Russia on 4th April. If this should indicate a regular route between wintering and breeding grounds it would be very strange and new. On the other hand it is perhaps more likely that it is a stray bird far from the normal migration line of the New Grounds flocks.

The long-distance record for any bird ringed at the New Grounds is now held by a Wigeon which was recovered near Novosibirsk in September, 1949, having been ringed at Slimbridge in the same month two years before. Novosibirsk is in 77°40'E, some 1,000 miles east of the Ural Mountains.

Another Wigeon was found at the mouth of the River Petchora. Two Mallards, usually regarded as less extensive travellers, were recovered in W. Finland.

Full details of the numbers ringed and the recoveries are shown in the four tables which follow.

**TABLE V**  
**BIRDS RINGED AT NEW GROUNDS DURING YEAR**

Rocket-nets	Duck Decoy	Traps, or other methods of capture
29 White-fronted Geese	802 Mallard 98 Teal 4 Wigeon 36 Pintail 18 Shoveler	5 Pintail 1 Shoveler 1 Tufted Duck

**TABLE VI**  
**BIRDS RINGED AWAY FROM NEW GROUNDS DURING YEAR**

Rocket-nets
643 Pink-footed Geese 1 Greenland White-fronted Goose 18 Greylag Geese

**TABLE VII**  
**PROPORTION OF RECOVERIES OF BIRDS RINGED SINCE 1946**

(Omitting Trust-reared birds and birds escaped from the collection)

Species	Total number ringed	Number Recovered		Per cent. recovered		
		In same season	Subsequently	In same season	Subsequently*	Total
Pink-footed Goose ..	650	59	—	9.2	—	9.1
White-fronted Goose	116	—	7	—	8.0	6.0
Greylag Goose ..	47	—	3	—	10.3	6.4
Mallard .. ..	1382	73	23	5.3	4.0	6.9
Teal .. ..	205	10	7	4.7	6.5	8.3
Wigeon .. ..	94	5	11	5.3	12.2	17.0
Pintail .. ..	82	2	—	2.4	—	2.4
Shoveler .. ..	77	9	6	11.7	10.2	19.5

\* This percentage excludes birds (included in Column 1) which have only carried rings for one season and could not therefore yet have been recovered subsequent to the season in which they were ringed.

TABLE VIII—DETAILS OF RECOVERIES

(In the order in which the birds were originally ringed)

## G E E S E

Ring no.	Species	Where ringed	Date ringed	Recovered
127338	Greylag	Kirkcudbright	26.3.50	Co. Wexford, 20.12.50
127350	Greylag	Kirkcudbright	28.3.50	Shot Lincs., 18.12.50
127357	Greylag	Kirkcudbright	28.3.50	Caught in rabbit-trap, Co. Louth, 13.12.50
128052	Whitefront	New Grounds	18.2.48	Eidersteht, nr. Tönning, Schleswig-Holstein (54°19'N., 8°59'E.), 11.12.50
129399	Whitefront	New Grounds	27.2.50	Sudja District, Kursk (51°10'N., 35°25'E.), 4.4.50
129397	Whitefront	New Grounds	27.2.50	W. shore of Kanin Peninsula (67°54'N., 44°10'E.), 21.5.50
129412	Whitefront	New Grounds	27.2.50	W. shore of Kanin Peninsula (67°54'N., 44°10'E.), 21.5.50
129418	Whitefront	New Grounds	27.2.50	Kolguev Island (69°N., 49°E.), 25.5.50
129420	Whitefront	New Grounds	27.2.50	Skeleton found Somerset, -1.51
128092	Whitefront	New Grounds	Left	Shot Middelburg, W. Flanders (51°15'N., 3°25'E.), 28.1.51
127318	Pinkfoot	New Grounds	-6.50	Shot Angus, 10.12.50
			Left	
			15.11.48	
129505	Pinkfoot	S.E. Scotland	8.10.50	Shot Lincs., 1.12.50
129517	Pinkfoot	S.E. Scotland	9.10.50	Shot Lincs., 22.10.50
129518	Pinkfoot	S.E. Scotland	9.10.50	Shot Lincs., 8.11.50
129532	Pinkfoot	S.E. Scotland	9.10.50	Shot Lincs., 13.12.50
129521	Pinkfoot	S.E. Scotland	9.10.50	Lincs., 12.1.51
129527	Pinkfoot	S.E. Scotland	9.10.50	Shot Yorks., 26.1.51
129522	Pinkfoot	S.E. Scotland	9.10.50	Shot Lincs., 10.2.51
129545	Pinkfoot	S.E. Scotland	12.10.50	Shot Fife, 28.10.50
129597	Pinkfoot	S.E. Scotland	12.10.50	Found dead Kinross, 26.3.51
129658	Pinkfoot	S.E. Scotland	15.10.50	Shot Lanark, 19.11.50
129652	Pinkfoot	S.E. Scotland	15.10.50	Shot Cambs., 27.1.51
129640	Pinkfoot	S.E. Scotland	15.10.50	Shot Aberdeen, -1.51
129602	Pinkfoot	S.E. Scotland	15.10.50	Shot Dumfries, 11.2.51
129676	Pinkfoot	S.E. Scotland	15.10.50	Found dead (shot) Cumberland, 13.5.51
129681	Pinkfoot	S.E. Scotland	18.10.50	Found dead Cumberland, -11.50
129700	Pinkfoot	S.E. Scotland	18.10.50	Shot Cumberland, 4.2.51
129716	Pinkfoot	S.E. Scotland	20.10.50	Shot Dumfries, 15.12.50
129718	Pinkfoot	S.E. Scotland	20.10.50	Shot Dumfries, early 2.51
129579	Pinkfoot	S.E. Scotland	21.10.50	Shot Angus, 19.12.50
130206	Pinkfoot	S.E. Scotland	21.10.50	Shot Dumfries, 23.12.50
130272	Pinkfoot	S.E. Scotland	23.10.50	Shot Midlothian, 26.10.50
130247	Pinkfoot	S.E. Scotland	23.10.50	Shot Midlothian, 26.10.50
130258	Pinkfoot	S.E. Scotland	23.10.50	Shot Kinross, 7.11.50
130243	Pinkfoot	S.E. Scotland	23.10.50	Shot Kinross, 11.11.50
130262	Pinkfoot	S.E. Scotland	23.10.50	Shot Perth, 16.12.50
130246	Pinkfoot	S.E. Scotland	23.10.50	Shot Lincs., 23.12.50
130238	Pinkfoot	S.E. Scotland	23.10.50	Shot Norfolk, 30.12.50
130252	Pinkfoot	S.E. Scotland	23.10.50	Shot Yorks, 11.1.51
130284	Pinkfoot	S.E. Scotland	23.10.50	Shot Sutherland, 30.1.51
130218	Pinkfoot	S.E. Scotland	23.10.50	Found dead Lincs., 19.2.51
130216	Pinkfoot	S.E. Scotland	23.10.50	Shot Angus, 5.3.51
130231	Pinkfoot	S.E. Scotland	23.10.50	Found dead Angus, 9.3.51
130282	Pinkfoot	S.E. Scotland	23.10.50	Shot Perth, 13.4.51
130291	Pinkfoot	S.E. Scotland	24.10.50	Shot East Lothian, 16.12.50
130297	Pinkfoot	S.E. Scotland	24.10.50	Found dead, Banff, before 3.4.51
130318	Pinkfoot	Dumfries	27.10.50	Shot Lincs., 25.11.50
130325	Pinkfoot	Dumfries	27.10.50	Found dead (shot), Dumfries, 14.12.50



Ring no.	Species	Where ringed	Date ringed	Recovered
130311	Pinkfoot	Dumfries	27.10.50	Shot Dumfries, 21.1.51
130312	Pinkfoot	Dumfries	27.10.50	Shot Aberdeen, 31.1.51
130346	Pinkfoot	Dumfries	28.10.50	Shot Dumfries, 16.11.50
130340	Pinkfoot	Dumfries	28.10.50	Shot Dumfries, 30.11.50
130348	Pinkfoot	Dumfries	28.10.50	Shot Cumberland, 22.1.51
130341	Pinkfoot	Dumfries	28.10.50	Found shot Stirling, 26.4.51
129951	Pinkfoot	Lincs	2.12.50	Found dead Lincs, 11.12.50
130389	Pinkfoot	Lincs	2.12.50	Found dead Norfolk, 14.12.50
130371	Pinkfoot	Lincs	2.12.50	Shot Lincs, 26.12.50
129916	Pinkfoot	Lincs	2.12.50	Lincs, 30.12.50
129886	Pinkfoot	Lincs	2.12.50	Lincs, -12.50
129908	Pinkfoot	Lincs	2.12.50	Lincs, 10.1.51
129962	Pinkfoot	Lincs	2.12.50	Lincs, 14.1.51
129898	Pinkfoot	Lincs	2.12.50	Kirkcudbright, 17.1.51
129906	Pinkfoot	Lincs	2.12.50	Kirkcudbright, 17.1.51
129980	Pinkfoot	Lincs	2.12.50	Kirkcudbright, 17.1.51
129942	Pinkfoot	Lincs	2.12.50	Shot Lincs, 28.1.51
129946	Pinkfoot	Lincs	2.12.50	Shot Lincs, 3.2.51
129975	Pinkfoot	Lincs	2.12.50	Found dead Lincs, 15.2.51
129924	Pinkfoot	Lincs	2.12.50	Found dead Lincs, 24.2.51
129885	Pinkfoot	Lincs	2.12.50	Found dead (shot) Aberdeen, 28.4.51
130358	Pinkfoot	Caught Lincs, released New Grounds	5.12.50	Shot, Glos., 13.12.50
130025	Pinkfoot	Dumfries	21.1.51	Shot Cumberland, 27.1.51
130441	Pinkfoot	Dumfries	10.3.51	Caught Kirkcudbright, 14.3.51
130366	Pinkfoot	Dumfries	10.3.51	Found dead Perth, before 2.4.51

## DUCKS

All ringed at the New Grounds. List does not include recaptures.

Ring no.	Species	Date Ringed	Recovered
926463	Mallard ♂	9. 9.48	Shot Malmö, S. Sweden (55°36'N., 13°0'E.), 12.8.50
926499	Mallard ♀	19.12.48	Klaypeda (formerly Memel), Lithuania (55°42'N., 21°10'E.), 11.9.49
926539	Mallard ♀	11. 2.49	Vähäkyrö, W. Finland (63°3'N., 22°10'E.), 25.4.51
403759	Mallard ♂	25. 8.49	Shot near Shifnal, Salop, 27.1.51
403754	Mallard ♀	25. 8.49	Taken Bakhuizen Decoy, near Stavoren, Friesland, Holland, end 1.51
403805	Mallard ♂	13. 9.49	Shot Stubbe Sø, Denmark (56°15'N., 10°40'E.), 5.8.50
403812	Mallard ♂	13. 9.49	Shot Frampton, Glos., 23.9.50
927601	Mallard ♂	24. 9.49	Found dead Lydney, Glos., 8.4.51
927607	Mallard ♂	24. 9.49	Aberech, near Pwllheli, Caerns, 25.10.50
927625	Mallard ♀	24. 9.49	Found in game-dealer's shop, Friesland, Holland, -10.50
927627	Mallard ♀	24. 9.49	Shot Ross-on-Wye, Hereford, 26.2.50
927648	Mallard ♀	24. 9.49	Remains found Droitwich, Worcs., 10.7.50
927672	Mallard ♂	24. 9.49	Shot Kalfö Fjarden, Bohuslan, W. Sweden, 5.9.50
927691	Mallard ♂	25. 9.49	Found dead Saul, Glos., 20.3.51
927781	Mallard ♂	26. 9.49	Killed by fox Todendorf, Schleswig-Holstein (53°40'N., 10°15'E.), -4.50
927599	Mallard ♂	10. 2.50	Persnas, Kalmar, Sweden (57°3'N., 16°56'E.), 10.8.50
928124	Mallard ♀	15. 8.50	Hockwold, Thetford, Norfolk, 11.1.51
928136	Mallard ♂	21. 8.50	Shot Frampton, Glos., 23.9.50
928163	Mallard ♀	25. 8.50	Shot Frampton, Glos., 23.9.50
928192	Mallard ♂	30. 8.50	Found dead Longtown, Hereford, -4.51
928219	Mallard ♀	11. 9.50	Hasfield, R. Severn, Glos., 7.1.51
928232	Mallard ♂	11. 9.50	Withington, Glos., 7.10.50

DUCKS—*continued*

Ring no.	Species	Date Ringed	Recovered
928239	Mallard ♀	11. 9.50	Oakley Park decoy, Ludlow, Salop, 22.11.50
928261	Mallard ♂	11. 9.50	Shot Frampton, Glos., 23.9.50
928295	Mallard ♂	11. 9.50	Shot Bibury, Glos., 1.11.50
928324	Mallard ♂	12. 9.50	Shot Langley, near Slough, Bucks., 31.1.51
928348	Mallard ♀	13. 9.50	Found dead West Huntshill, Som., 25.1.51
928356	Mallard ♂	13. 9.50	Hartpury, Glos., 4.1.51
928359	Mallard ♂	13. 9.50	Shot Belz, Morbihan, France (47°41'N., 3°13'W.), early 1.51
928365	Mallard ♀	13. 9.50	Elmore Court, Glos., 30.9.50
928372	Mallard ♂	13. 9.50	Shot R. Coln, Foss Bridge, Glos., 30.9.50
928382	Mallard ♀	13. 9.50	R. Severn, Worcester, 9.12.50
928414	Mallard ♂	13. 9.50	R. Wye, near Ross, Hereford, 11.10.50
928444	Mallard ♂	13. 9.50	Caught Borough Fen Decoy, Lincs., 29.10.50
928445	Mallard ♂	13. 9.50	Shot R. Wye, near Ross, Hereford, -1.51
928458	Mallard ♂	13. 9.50	Shot South Molton, Devon, 1.11.51
928152	Mallard ♂	13. 9.50	Found dead Aylburton, near Lydney, Glos., 12.4.51
928385	Mallard ♂	13. 9.50	Hauho, W. Finland (61°15'N., 24°30'E.), 26.4.51
928493	Mallard ♂	16. 9.50	Elmore Court, Glos., 31.12.50
928523	Mallard ♂	17. 9.50	Shot Frampton, Glos., 23.9.50
928531	Mallard ♂	17. 9.50	Ross-on-Wye, Hereford, 4.1.51
928548	Mallard ♂	18. 9.50	Shot Hartpury, Glos., 4.1.51
928549	Mallard ♀	18. 9.50	Shot near Berkeley, Glos., 30.10.50
928555	Mallard ♀	18. 9.50	Shot near Chepstow, Mon., 17.10.50
928568	Mallard ♀	22. 9.50	Caught by dog, Kenn, Clevedon, Som., 20.2.51
928574	Mallard ♂	22. 9.50	Near Shrewsbury, Salop, 24.11.50
928587	Mallard ♂	23. 9.50	Shot near Troyes, Aube, France (48°18'N., 4°4'E.), -3.51
928603	Mallard ♂	23. 9.50	Found dead Lydney, Glos., 10.2.51
928614	Mallard ♂	23. 9.50	Shot Frampton, Glos., same day
928617	Mallard ♂	23. 9.50	Shot Frampton, Glos., same day
928629	Mallard ♂	23. 9.50	Shot Frampton, Glos., same day
928638	Mallard ♀	23. 9.50	Aqualate Mere, Newport, Salop, 28.10.50
928639	Mallard ♂	23. 9.50	Shot Friskney, Lincs., 1.11.50
928649	Mallard ♂	24. 9.50	Strensham, Worcs., 23.12.50
928690	Mallard ♂	24. 9.50	Stow-on-the-Wold, Glos., 16.11.50
129469	Mallard ♂	27. 9.50	Shot Lydney, Glos., 23.11.50
928730	Mallard ♂	4.10.50	Shot Stanton, Salop, 27.1.51
928763	Mallard ♂	12.10.50	Ross-on-Wye, Hereford, 3.12.50
928849	Mallard ♂	26.10.50	Deeping St. James, Lincs., 28.11.50
928860	Mallard ♀	27.10.50	Found long dead, Lydney, Glos., 25.4.51
906683	Teal ♂	29. 8.49	Fairford, Glos., 31.10.50
906528	Teal ♂	13. 9.49	Watford, 10.12.50
906724	Teal ♀	1. 3.50	Onnerup, near Malmö, Sweden (55°36'N., 13°0'E.), 11.11.50
906734	Teal ♀	30. 3.50	Shot Ahaus, Westphalia (52°5'N., 7°0'E.), 7.10.50
909513	Teal ♂	20. 8.50	Shot Cirencester, Glos., 30.8.50
909547	Teal ♀	31. 8.50	Nalliers, Vendée, France (46°40'N., 1°20'W.), 15.12.50
909607	Teal ♂	11.10.50	Foxford, Co. Mayo, 25.11.50
909616	Teal ♀	22.10.50	Shot Stockbridge, Hants., 12.1.51
904206	Wigeon ♂	26. 9.47	Novosibirsk Govt. (54°10'N., 77°40'E.), 12.9.49
906352	Wigeon ♂	8.11.48	Naryon Mar, mouth of R. Petchora (68°N., 53°E.), -6.50
906481	Wigeon ♂	23. 9.48	Talais, Medoc, Gironde, France (45°9'N., 0°42'W.), 29.12.50
928314	Pintail ♂	12. 9.50	Shot Medoc, Gironde, France (45°9'N., 0°42'W.), -12.50
904167	Shoveler ♀	16.11.47	Shot Chateau Renault, Indre-et-Loire (47°36'N., 0°54'E.), 20.9.48
906437	Shoveler ♂	5.12.48	Shot St. David's Park, Pembs., 22.1.51
906693	Shoveler ♂	24. 9.49	Shot Frampton, Glos., 23.9.50
909511	Shoveler ♂	12. 8.50	Shot Groede, Zeeland, Holland (51°30'N., 3°50'E.), 15.8.50



## BIRDS (Other than Anatidæ) RECORDED AT THE NEW GROUNDS

THE following list is confined to observations made between 1st May, 1950, and 30th April, 1951, and includes notes on the common species only where of especial interest.

Principal contributors may be identified by their initials, as follows : H. B.—H. Boyd; S. T. J.—S. T. Johnstone; D. F. McK.—D. F. McKinney; P. S.—P. Scott; J. Y.—J. Yealland.

RAVEN (*Corvus corax*).—Two on Dumbles 20th December (H. B.).

HOODED CROW (*Corvus cornix*).—One on Dumbles 4th and 11th, two 12th, one 19th November; one 27th and 30th December; one 8th April (H. B., D. F. McK.).

JAY (*Garrulus glandarius*).—Two flying south over pens 9th May (P. S.).

SISKIN (*Carduelis spinus*).—One near the Patch 21st December (P. S.).

BULLFINCH (*Pyrrhula pyrrhula*).—Not less than thirty in area 28th December (A. Shaw); otherwise only a few scattered records of single birds.

TREE-SPARROW (*Passer montanus*).—One pair certainly nested in Decoy Wood and at least three others believed to have done so in Decoy and Rushy Pen. A flock of about forty near headquarters in February.

TREE-PIBIT (*Anthus trivialis*).—Three 13th May (D. F. McK.). Two identified in a flock of pipits on Dumbles 19th April (D. F. McK.).

WHITE WAGTAIL (*Motacilla a. alba*).—Two on Dumbles with Yellow Wagtails 23rd April (D. F. McK.).

REED-WARBLER (*Acrocephalus scirpaceus*).—One Bottom New Piece 22nd May (H. B., D. F. McK.).

SEDGE-WARBLER (*Acrocephalus schænobænus*).—Two singing in Decoy Wood and seven singing in reed-bed Bottom New Piece 22nd May (H. B., D. F. McK.), but number of breeding pairs not known.

- LESSER WHITETHROAT (*Sylvia curruca*).—One near Headquarters Cottage 8th August (H. B., D. F. McK.), one Top New Piece 31st August, and four in same place 1st September (H. B.).
- FIELDFARE (*Turdus pilaris*) and REDWING (*T. musicus*).—Seen on passage on many days in winter, largest numbers 4th November (Fieldfares predominating) and 2nd and 4th January (Redwings more plentiful).
- WHINCHAT (*Saxicola rubetra*).—One near Goose House 10th May (D. F. McK.), two same place 23rd July (H. B.), and three (adult females and two juveniles) 1st September (H. B.). One in Rushy Pen 29th April (J. Y.).
- STONECHAT (*Saxicola torquata*).—One near Patch 25th September (H. B.), the only record for the area.
- RED-SPOTTED BLUETHROAT (*Luscinia svecica svecica*).—A male seen in hawthorns near main pillbox 15th April (M. Everitt). Described as 'a robin with a blue breast with a red spot in the middle'. Seen at close range, though without binoculars. Could not be found subsequently.
- MERLIN (*Falco columbarius*).—One on Dumbles 10th May (H. B., D. F. McK.); a male 12th April (D. F. McK.).
- BUZZARD (*Buteo buteo*).—One over pens 4th June (H. B.).
- NIGHT-HERON (*Nycticorax nycticorax*).—An adult 4th September (F. R. H. Brian, E. J. B. Langhorne, H. B., P. S.), seen flying past Rushy Pen by all four observers. In flight appeared as a small heron with a short neck and rather short wings, underparts white, black of crown merging with black on mantle, wings and tail grey. The first two observers twice saw the bird at rest alongside the rhine east of the pens, once at c.30 yds. for some minutes, and were impressed by the whiteness of the underparts and the markedly yellow legs. This appears to be only the second record for the county.
- GEESE AND DUCKS.—Details on pages 7 and 21.
- MANX SHEARWATER (*Puffinus puffinus*).—One flying over river 12th September after south-westerly gale (H. B.). It was being harried by Black-headed Gulls, which repeatedly forced it down to the water and made it dive. Another, found at Uley, Glos., on 11th, was released on the river on 12th but was taken by a Peregrine within 10 minutes.
- GREATCRESTED GREBE (*Podiceps cristatus*).—One off Purton breakwater 29th October (J. Field).
- LITTLE GREBE (*Podiceps ruficollis*).—Single birds seen in Decoy on seventeen days between 8th September and 12th November, two on 15th September.
- STOCK-DOVE (*Columba ænas*).—A pair nested successfully in the Decoy Wood. Two nestlings ringed.
- TURTLE-DOVE (*Streptopelia turtur*).—Three pairs nested in Decoy Wood. Three juveniles and 2 nestlings ringed. A flock of 20 seen on Dumbles 10th May.
- BAR-TAILED GODWIT (*Limosa lapponica*).—One 13th (J. P. Paige, S. T. J.), three 28th August, one 2nd September (H. B.), one 29th December to 3rd January (J. D. Powne).
- BLACK-TAILED GODWIT (*Limosa limosa*).—In August: four on 13th (H. B.), nineteen 18th (J. H. P. Allan, C. N. Mallinson), three 26th (L. W. Hayward, Mrs. M. J. Morgan), twenty-three 27th, eight 28th, three 29th and

- 31st (H. B.). Five on 1st, two 2nd, one 7th September (H. B.). One 8th, five 12th April (D. F. McK.).
- CURLEW (*Numenius arquata*).—Largest flocks counted 312 31st August, c. 400 26th January (H. B.).
- WHIMBREL (*Numenius phaeopus*).—One or two seen on many days in May, July, August and September. Twenty-two, including sixteen juveniles, 10th August (H. B.).
- JACK SNIFE (*Lymnocyptes minimus*).—One 19th November (P. S.).
- TURNSTONE (*Arenaria interpres*).—Single birds 23rd May (H. B., D. F. McK.) and 15th August (J. P. Paige, S. T. J.).
- KNOT (*Calidris canutus*).—One 26th August (L. W. Hayward, Mrs. M. J. Morgan).
- DUNLIN (*Calidris alpina*).—Most numerous in May, when c.800 present 10th and 23rd; winter numbers small.
- LITTLE STINT (*Calidris minuta*).—Two 13th (J. P. Paige, S. T. J.), one 28th August (H. B.).
- SANDERLING (*Crocethia alba*).—A flock of 40 22nd May (H. B., D. F. McK.), and more 23rd but good count impracticable; one 26th August (L. W. Hayward, Mrs. M. J. Morgan), two or three 3rd September (R. Kidwell); three 28th March (Miss M. S. van Oostveen).
- RUFF (*Philomachus pugnax*).—One 28th August (Salim Ali, H. B., P. S.), 7th September (R. Kidwell) and 29th September (H. B.).
- COMMON SANDPIPER (*Actitis hypoleucos*).—Ten 14th July, the most seen. One caught in decoy 26th April.
- GREEN SANDPIPER (*Tringa ochropus*).—One on Dumbles 14th and 27th June (H. B., D. F. McK.), one flying over Rushy Pen 15th August (J. P. Paige, S. T. J.), three Dumbles 24th April (B. King).
- REDSHANK (*Tringa totanus*).—Present throughout year, but eight 27th June the most recorded.
- GREENSHANK (*Tringa nebularia*).—Two Dumbles 13th May (D. F. McK.), single birds 18th May (L. W. Hayward), 14th July (H. B.), 13th August (J. P. Paige, S. T. J.), 1st September (H. B.), two over Rushy Pen 5th September (R. Kidwell), single birds on river 6th to 9th September (R. Kidwell).
- GOLDEN PLOVER (*Pluvialis apricaria*).—Seen frequently during winter but two 23rd May (D. F. McK.), the only indication of late spring passage.
- GREY PLOVER (*Squatarola squatarola*).—Recorded only in October; nineteen 12th, eight 13th, seven 14th (D. F. McK.).
- OYSTER-CATCHER (*Haematopus ostralegus*).—Two on river 13th August (J. P. Paige, S. T. J.).
- BLACK TERN (*Chlidonias niger*).—Sixteen over river 13th May (D. F. McK.). One 7th August (L. W. Hayward, Mrs. M. J. Morgan).
- COMMON or ARCTIC TERN (*Sterna hirundo* or *macrura*).—About thirty 13th May (D. F. McK.). One, apparently *macrura*, 21st September (L. W. Hayward, Mrs. M. J. Morgan), two 23rd, one 27th, 29th September (H. B.), one 11th, 12th, 13th, two or more 14th October (D. F. McK.).

**LITTLE TERN** (*Sterna albifrons*).—One 5th October and a juvenile tern thought to be of this species 14th October (D. F. McK.).

**BLACK-HEADED GULL** (*Larus ridibundus*).—A gull seen with several Black-headed on the Dumbles 11th November must presumably be ascribed to this species though quite abnormally coloured. In size, shape and mode of flight the bird resembled its companions, but the whole of its plumage was a brilliant white except for black tips to the primaries (appearing more extensive below than above). The bill was bright coral-red with a black tip and the legs also bright red, not crimson.

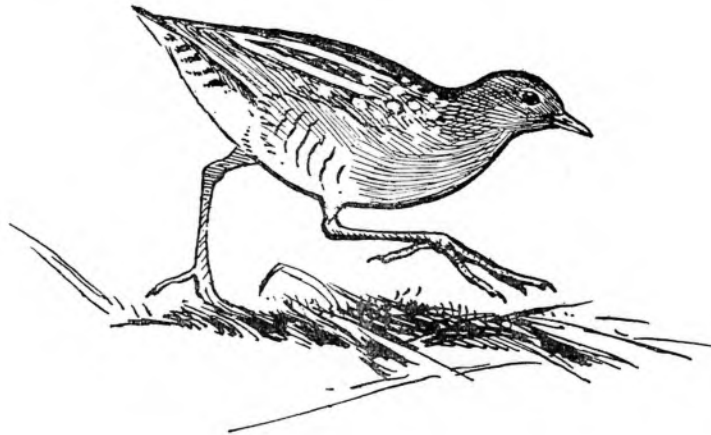
**COMMON GULL** (*Larus canus*).—An estimate of about 20,000 roosting on mud 26th February (D. F. McK.).

**LESSER BLACK-BACKED GULL** (*Larus fuscus*).—One frequented Patch throughout winter; a few other records of single birds in winter.

**LITTLE CRAKE** (*Porzana parva*).—An adult male frequented the decoy from 22nd to 29th April, when it was found dead with an injured head. It was very tame and was watched on many occasions by at least ten observers. The general colouring resembled that of a Water-Rail, though the back was a paler brown with quite large white spots on the mantle feathers (visible only at very close range). The under tail-coverts were white flecked with black. The bird was very much smaller than *Rallus aquaticus*. Its overall length was the same as that of a Hedge Sparrow, *Prunella modularis*, which at one time was feeding beside it. The bill was yellowish-green with red at the gape (same on the lower mandible, though more on the upper); the red was not often apparent in the field. The legs and feet were green.

This appears to be the first record of this species for the county. The specimen is now in the British Museum (Natural History).

**COOT** (*Fulica atra*).—A juvenile, not yet full-grown, in Rushy Pen 6th and 7th August. Winter population in pens at maximum of eleven in late January and early February.



## WATERFOWL COLLECTION

THE collection has continued to improve during the year and now consists of 130 species and subspecies and some 920 birds altogether. One of the most attractive features is the increase in the numbers of full-winged birds. During the year it was possible to see the following species in flight :

SOUTHERN RED-BILLED WHISTLING DUCK (*D. a. discolor*).  
 WHITE-FACED WHISTLING DUCK (*D. viduata*).  
 COSCOROBA SWAN (*C. coscoroba*).  
 BARNACLE GOOSE (*B. leucopsis*).  
 DARK-BELLIED BRENT GOOSE (*B. b. bernicla*).  
 GREY LAG GOOSE (*A. a. anser*).  
 YELLOW-BILLED BEAN GOOSE (*A. f. fabalis*).  
 PINK-FOOTED GOOSE (*A. brachyrhynchus*).  
 WHITE-FRONTED GOOSE (*A. a. albifrons*).  
 BAR-HEADED GOOSE (*A. indicus*).  
 EMPEROR GOOSE (*A. canagicus*).  
 BLUE GOOSE (*A. c. caerulescens*).  
 LESSER SNOW GOOSE (*A. c. hyperboreus*).  
 GREATER SNOW GOOSE (*A. c. atlanticus*).  
 ROSS'S GOOSE (*A. rossi*).  
 BAHAMA PINTAIL (*A. bahamensis*).  
 MALLARD (*A. p. platyrhynchos*).  
 PINTAIL (*A. a. acuta*).  
 GADWALL (*A. s. strepera*).  
 WIGEON (*A. penelope*).  
 SHOVELER (*A. clypeata*).  
 MANDARIN DUCK (*A. galericulata*).  
 CAROLINA DUCK (*A. sponsa*).

As usual a large number of wild birds spent the winter in the pens. Most numerous were Pintails. Details of these will be found on pp. 21-22.

## ADDITIONS TO THE COLLECTION

### New Species

Eight new species and one new sub-species have been added to the collection during the past year :—

WANDERING WHISTLING DUCK (*Dendrocygna arcuata*).—A pair received as an exchange from Rotterdam Zoo.

INDIAN SPOT-BILL (*Anas p. pæcilorhyncha*).—A pair received in exchange from Rotterdam Zoo.

SMEW (*Mergus albellus*).—A pair from Hamburg Zoo ; the female unfortunately died on the night of arrival.

WHITE-EYE, or FERRUGINOUS DUCK (*Aythya n. nyroca*).—A pair from Rotterdam Zoo.

INDIAN PYGMY GOOSE, or COTTON TEAL (*Nettapus c. coromandelianus*).—Three males and one female from Herr F. Duyzend, of Zeist, Holland.

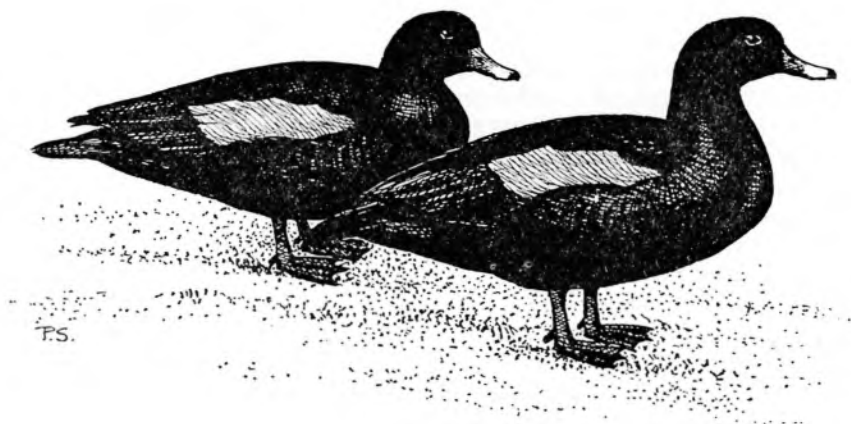
- SOUTH AFRICAN BLACK DUCK (*Anas s. sparsa*).—A male and three females from Mr. M. Wocke, of Belleville, Cape Province.
- AFRICAN WHITE-BACKED DUCK (*Thalassornis l. leuconota*).—A pair presented by Mr. M. Wocke.
- HARTLAUB'S DUCK (*Cairina hartlaubi*).—Two pairs collected by Mr. K. Smith in the Southern Province of Sierra Leone. This is a species of particular interest, being, it is believed, new to British aviculture.
- PACIFIC WHITE-FRONTED GOOSE (*Anser albifrons frontalis*).—A pair as a gift from Dr. Dillon Ripley.

### Species Not New to the Collection

In addition to the new species, the following forms, already represented in the collection, have been acquired :—

- MANED GOOSE (*Chenonetta jubata*).—Five pairs.
- CHESTNUT-BREADED TEAL (*Anas castanea*).—One pair.
- AUSTRALIAN GREY TEAL (*Anas gibberifrons mathewsi*).—One pair.
- This valuable collection was presented to the Trust by Major W. Winter Irving, of Victoria, Australia.
- SPUR-WINGED GOOSE (*Plectropterus gambensis niger*).—Two pairs received in exchange from Major H. R. Hendy, in Swaziland, S. Africa.
- SPUR-WINGED GOOSE (*Plectropterus g. gambensis*).—A pair given by Mr. R. H. Simcock, in Nigeria.
- GREY LAG GOOSE (*Anser a. anser*).—Three presented by Mr. A. Stewart Dean.
- MANDARIN DUCK (*Aix galericulata*).—Seven young ones as a gift from Mr. C. D. W. Savage.
- BLUE-WINGED TEAL (*Anas discors*).—Three pairs from Mr. Calvin Wilson, of Saltlake City, Utah.
- BLUE-WINGED GOOSE (*Cyanochen cyanoptera*).—Two males and one female.
- ABYSSINIAN YELLOW-BILLED DUCK (*Anas undulata ruppelli*).—Three drakes.
- SOUTHERN POCHARD (*Netta erythrophthalma*).—Two males and one female.
- The above three species presented by Major A. Irwin, at Addis Ababa.
- WHITE-FACED WHISTLING DUCK (*Dendrocygna viduata*).—Two males and one female.
- SOUTH AMERICAN COMB DUCK (*Sarkidiornis melanotus carunculatus*).—A pair.
- BRAZILIAN TEAL (*Amazonetta braziliensis*).—A male and two females.
- The above three species presented by Mr. C. R. Murray, of Rio de Janeiro.
- BARROW'S GOLDEN-EYE (*Bucephala islandica*).—A male and four females presented by Prof. I. McT. Cowan, of Vancouver.
- CAPE SHOVELER (*Anas smithi*).—One male and two females.
- RED-BILLED PINTAIL (*Anas erythrorhyncha*).—Four females.
- SOUTH AFRICAN YELLOW-BILLED DUCK (*Anas undulata*).—Four females.
- The above three species presented by Mr. M. Wocke, of Cape Province.
- HAWAIIAN GOOSE (*Branta sandvicensis*).—A male on loan from Mr. H. Shipman, of Hawaii.
- COMMON SCOTER (*Melanitta n. nigra*).—A male presented by Miss Tucker, and a female by Mr. E. G. Holt.





**LIST OF BIRDS (with Numbers of Specimens) IN THE COLLECTION AT  
30th APRIL, 1951**

MAGPIE GOOSE ( <i>Anseranas semipalmata</i> ) . . . . .	2
BLACK-BILLED WHISTLING DUCK ( <i>Dendrocygna arborea</i> ) . . . . .	1
SOUTHERN RED-BILLED WHISTLING DUCK ( <i>D. autumnalis discolor</i> ) . . . . .	8
FULVOUS WHISTLING DUCK ( <i>D. bicolor</i> ) . . . . .	2
WANDERING WHISTLING DUCK ( <i>D. arcuata</i> ) . . . . .	2
JAVAN WHISTLING DUCK ( <i>D. javanica</i> ) . . . . .	2
EYTON'S WHISTLING DUCK ( <i>D. eytoni</i> ) . . . . .	2
WHITE-FACED WHISTLING DUCK ( <i>D. viduata</i> ) . . . . .	8
COSCOROBA SWAN ( <i>Coscoroba coscoroba</i> ) . . . . .	4
WHOOPEE SWAN ( <i>Cygnus c. cygnus</i> ) . . . . .	3
WHISTLING SWAN ( <i>C. c. columbianus</i> ) . . . . .	4
BEWICK'S SWAN ( <i>C. columbianus bewicki</i> ) . . . . .	2
EASTERN BEWICK'S SWAN ( <i>C. columbianus jankowskii</i> ) . . . . .	2
BLACK-NECKED SWAN ( <i>C. melanocoryphus</i> ) . . . . .	2
MUTE SWAN ( <i>C. olor</i> ) . . . . .	4
BLACK SWAN ( <i>C. atratus</i> ) . . . . .	2
CANADA GOOSE ( <i>Branta canadensis canadensis</i> ) . . . . .	2
CENTRAL CANADA GOOSE ( <i>B. c. interior</i> ) . . . . .	2
LESSER CANADA GOOSE ( <i>B. c. parvipes</i> ) . . . . .	1
WESTERN CANADA GOOSE ( <i>B. c. occidentalis</i> ) . . . . .	6
TUNDRA CANADA GOOSE ( <i>B. c. leucopareia</i> ) . . . . .	8
CAKCLING GOOSE ( <i>B. c. minima</i> ) . . . . .	10
HAWAIIAN GOOSE ( <i>B. sandvicensis</i> ) . . . . .	3
BARNACLE GOOSE ( <i>B. leucopsis</i> ) . . . . .	17
DARK-BELLIED BRENT GOOSE ( <i>B. b. bernicla</i> ) . . . . .	9
LIGHT-BELLIED BRENT GOOSE ( <i>B. b. hrota</i> ) . . . . .	3
BLACK BRANT ( <i>B. b. nigricans</i> ) . . . . .	3
RED-BREASTED GOOSE ( <i>B. ruficollis</i> ) . . . . .	19
SWAN GOOSE ( <i>Anser cygnoides</i> ) . . . . .	2
GREY LAG GOOSE ( <i>Anser a. anser</i> ) . . . . .	9
EASTERN GREYLAG GOOSE ( <i>A. a. rubrirostris</i> ) . . . . .	5

YELLOW-BILLED BEAN GOOSE ( <i>A. f. fabalis</i> )	2
BEAN GOOSE ( <i>A. fabalis</i> ssp.)	7
PINK-FOOTED GOOSE ( <i>A. brachyrhynchus</i> )	20
WHITE-FRONTED GOOSE ( <i>A. a. albifrons</i> )	5
GREENLAND WHITE-FRONTED GOOSE ( <i>A. a. flavirostris</i> )	8
PACIFIC WHITE-FRONTED GOOSE ( <i>A. a. frontalis</i> )	2
PERRY RIVER WHITE-FRONTED GOOSE ( <i>A. albifrons</i> ssp.)	2
LESSER WHITE-FRONTED GOOSE ( <i>A. erythropus</i> )	10
BAR-HEADED GOOSE ( <i>A. indicus</i> )	12
EMPEROR GOOSE ( <i>A. canagicus</i> )	6
BLUE GOOSE ( <i>A. c. caerulescens</i> )	6
LESSER SNOW GOOSE ( <i>A. c. hyperboreus</i> )	4
GREATER SNOW GOOSE ( <i>A. c. atlanticus</i> )	21
ROSS'S GOOSE ( <i>A. rossi</i> )	15
RUDDY SHELDUCK ( <i>Tadorna ferruginea</i> )	4
SOUTH AFRICAN SHELDUCK ( <i>T. cana</i> )	6
AUSTRALIAN SHELDUCK ( <i>T. tadornoides</i> )	3
NEW ZEALAND SHELDUCK ( <i>T. variegata</i> )	6
RED-BACKED RADJAH SHELDUCK ( <i>T. radjah rufitergum</i> )	2
COMMON SHELDUCK ( <i>T. tadorna</i> )	2
EGYPTIAN GOOSE ( <i>Alopochen aegyptiacus</i> )	4
ORINOCO GOOSE ( <i>Neochen jubatus</i> )	3
ABYSSINIAN BLUE-WINGED GOOSE ( <i>Cyanochen cyanoptera</i> )	5
ASHY-HEADED GOOSE ( <i>Chloephaga poliocephala</i> )	4
RUDDY-HEADED GOOSE ( <i>C. rubidiceps</i> )	6
GREATER MAGELLAN GOOSE ( <i>C. p. leucoptera</i> )	2
LESSER MAGELLAN GOOSE ( <i>C. p. picta</i> )	3
CEREOPSIS GOOSE ( <i>Cereopsis novae-hollandiae</i> )	8
ANDEAN CRESTED DUCK ( <i>Lophonetta specularioides alticola</i> )	5
MARbled TEAL ( <i>Anas angustirostris</i> )	6
CAPE TEAL ( <i>A. capensis</i> )	7
VERSICOLOR TEAL ( <i>A. v. versicolor</i> )	1
PUNA TEAL ( <i>A. v. puna</i> )	3
RED-BILLED PINTAIL ( <i>A. erythrorhyncha</i> )	6
BAHAMA PINTAIL ( <i>A. bahamensis</i> )	10
CHILEAN PINTAIL ( <i>A. georgica spinicauda</i> )	9
PINTAIL ( <i>A. a. acuta</i> )	c.30
CHILEAN TEAL ( <i>A. f. flavirostris</i> )	6
COMMON TEAL ( <i>A. c. crecca</i> )	5
GREEN-WINGED TEAL ( <i>A. c. carolinensis</i> )	7
BAIKAL TEAL ( <i>A. formosa</i> )	1
AUSTRALIAN GREY TEAL ( <i>A. gibberifrons mathewsi</i> )	5
CHESTNUT-BREASTED TEAL ( <i>A. castanea</i> )	3
NEW ZEALAND BROWN DUCK ( <i>A. aucklandica chlorotis</i> )	1
MALLARD ( <i>A. p. platyrhynchos</i> )	c.120
HAWAIIAN DUCK ( <i>A. p. wyvilliana</i> )	2
NORTH AMERICAN BLACK DUCK ( <i>A. f. rubripes</i> )	6
FLORIDA DUCK ( <i>A. f. fulvigula</i> )	2
MOTTLED DUCK ( <i>A. f. maculosa</i> )	3
INDIAN SPOT-BILL ( <i>A. p. pæcilorhyncha</i> )	2
AUSTRALIAN GREY DUCK ( <i>A. superciliosa rogersi</i> )	7

SOUTH AFRICAN YELLOW-BILL ( <i>A. u. undulata</i> )	10
ABYSSINIAN YELLOW-BILL ( <i>A. u. rupelli</i> )	5
CAMEROON YELLOW-BILL ( <i>A. undulata</i> ssp.)	1
PHILIPPINE DUCK ( <i>A. luzonica</i> )	2
SOUTH AFRICAN BLACK DUCK ( <i>A. s. sparsa</i> )	3
GADWALL ( <i>A. s. strepera</i> )	25
FALCATED TEAL ( <i>A. falcata</i> )	2
WIGEON ( <i>A. penelope</i> )	20
AMERICAN WIGEON ( <i>A. americana</i> )	7
CHILOE WIGEON ( <i>A. sibilatrix</i> )	6
BLUE-WINGED TEAL ( <i>A. discors</i> )	5
CINNAMON TEAL ( <i>A. c. cyanoptera</i> )	10
GARGANEY ( <i>A. querquedula</i> )	12
SOUTH AMERICAN SHOVELER ( <i>A. platalea</i> )	2
CAPE SHOVELER ( <i>A. smithi</i> )	3
SHOVELER ( <i>A. clypeata</i> )	17
RED-CRESTED POCHARD ( <i>Netta rufina</i> )	6
ROSY-BILL ( <i>N. peposaca</i> )	6
SOUTHERN POCHARD ( <i>N. erythrophthalma</i> )	13
CANVASBACK ( <i>Aythya vallisneria</i> )	5
COMMON POCHARD ( <i>A. ferina</i> )	10
RED-HEAD ( <i>A. americana</i> )	8
WHITE-EYE, or FERRUGINOUS DUCK ( <i>A. nyroca</i> )	2
RING-NECKED SCAUP ( <i>A. collaris</i> )	2
TUFTED DUCK ( <i>A. fuligula</i> )	8
COMMON SCAUP ( <i>A. m. marila</i> )	6
LESSER SCAUP ( <i>A. affinis</i> )	5
BRAZILIAN TEAL ( <i>Amazonetta braziliensis</i> )	2
MANED GOOSE ( <i>Chenonetta jubata</i> )	13
MANDARIN DUCK ( <i>Aix galericulata</i> )	15
CAROLINA DUCK ( <i>A. sponsa</i> )	26
INDIAN PYGMY GOOSE, or COTTON TEAL ( <i>Nettapus coromandelianus</i> )	4
INDIAN COMB DUCK ( <i>Sarkidiornis m. melanotus</i> )	2
SOUTH AMERICAN COMB DUCK ( <i>S. m. carunculatus</i> )	3
HARTLAUB'S DUCK ( <i>Cairina hartlaubi</i> )	4
MUSCOVY DUCK ( <i>C. moschata</i> )	3
SPUR-WINGED GOOSE ( <i>Plectropterus g. gambensis</i> )	4
BLACK SPUR-WINGED GOOSE ( <i>P. g. niger</i> )	3
COMMON EIDER ( <i>Somateria mollissima</i> )	7
COMMON SCOTER ( <i>Melanitta nigra</i> )	1
BARROW'S GOLDENEYE ( <i>Bucephala islandica</i> )	9
AMERICAN GOLDENEYE ( <i>B. clangula americana</i> )	1
COMMON GOLDENEYE ( <i>B. c. clangula</i> )	1
SMEW ( <i>Mergus albellus</i> )	1
GOOSANDER ( <i>M. merganser</i> )	1
RED-BREASTED MERGANSER ( <i>M. serrator</i> )	6
NORTH AMERICAN RUDDY DUCK ( <i>Oxyura jamaicensis</i> )	7
AFRICAN WHITE-BACKED DUCK ( <i>Thalassornis l. leuconota</i> )	2
Total	890

**HYBRIDS**

Andean Goose × Upland Goose . . . . .	2
Grey Lag Goose × Barnacle Goose . . . . .	2
Ross's Goose × Red-breasted Goose . . . . .	1
Red-breasted Goose × Lesser White-fronted Goose . . . . .	3
Lesser Snow Goose × Blue Snow Goose . . . . .	3
Grey Lag Goose × Canada Goose . . . . .	1
White-fronted Goose × Bean Goose . . . . .	2
Tundra Canada Goose × Lesser Snow Goose . . . . .	1
Andean Goose × Egyptian Goose . . . . .	1
Rosy-bill × Yellow-bill . . . . .	1
Chilean Teal × Carolina Duck . . . . .	3
Red-crested Pochard × Chilean Pintail . . . . .	2
Cape Teal × Tufted Duck . . . . .	1
Chilean Pintail × Bahama Pintail . . . . .	2
Falcated Teal × American Wigeon . . . . .	1
Chilean Teal × Chestnut-breasted Teal . . . . .	3
Blue-winged Teal × Cinnamon Teal . . . . .	3

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Total . . . 32

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Total number of birds at the New Grounds . . . 922

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## THE BREEDING SEASON, 1950

By J. Yealland, Curator

FROM the tables which follow it will be seen that, in general, a greater degree of success was achieved with the rearing of goslings than with ducklings.

The summer was persistently wet and often cold so that the growth of grass and clover was maintained at a higher rate than would have been the case in a hot dry summer when grass grows little and becomes tough and unappetizing.

It may have been that this abundance and palatability of plant food more than compensated for the inclement weather by maintaining health and building up the goslings' resistance to chills. However that may be, there is no doubt that cold and wet are death to all but the strongest of ducklings, and it was evident from post-mortem examination that many of the deaths were traceable to chill.

There were some cases of paratyphoid and a number of ducklings were infested with tape-worms of the genus *Hymenolepis*, while others died at an early age through having failed to assimilate all the yolk of the egg. The cause of this has not been ascertained, but it occurred mostly in those which were late in hatching.

A disappointment was the failure to rear more than one Marbled Teal. These were extremely sensitive to cold, a condition which has been observed elsewhere.

The Southern Red-billed Whistling ducklings hatched very late in the year and, though they thrived until the end of September, all but four then developed rickets.

This year the parents, a full-winged pair, went to the other extreme and nested early in March. Up to the 30th of April, 31 eggs were laid, though only five of them have proved fertile.<sup>1</sup>

It would be almost impossible to reach more than general conclusions from the analysis, for some of the parent birds are elderly, others may be inbred or closely related, while it is possible that some, having been bred in captivity, are of slightly inferior physical quality and therefore tend to be unlikely to produce really healthy young.

This possibility was particularly noticeable in the Ross's Geese, the two young whose father was a wild-caught bird from the Perry River being far superior to those of entirely hand-reared parentage.

The food used for goslings was fine soaked biscuit-meal in addition, of course, to grass and clover growing in the pens. Food for ducklings included the biscuit-meal, dried milk, raw egg, meat-meal (believed to be made from dried liver or whale meat), dried and fresh ants' 'eggs', cod-liver oil, various small water-life (including small shrimps which are found in the Severn and which form the main food of the local wild Shelducklings), and duckweed. The Sea-ducklings were reared on minced sheep's heart, ants' 'eggs', a small amount of biscuit-meal, water insects and cod-liver oil.

<sup>1</sup>During the 1951 season the female laid 75 eggs from which only 5 young were reared.

**TABLE IX**  
**HATCHING AND REARING**

Species	Breeding pairs	Date of first egg	No. of eggs	Taken by vermin	Infertile	Broken by hen	Addled	Dead in shell	Hatched	% Hatched of eggs laid	% in 1949	Crushed by hen	Killed by predators	Reared	Reared in 1949	% Reared of eggs hatched	% in 1949	Remarks
Southern Red-billed Whistling Duck	1	22.7	14	—	—	—	—	1	13	93%	—	—	—	4	—	31%	—	Plus 5 rachitic specimens destroyed
Coscoroba Swan ..	1	13.3	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	
Tundra Canada Goose	2	10.4	23	—	13	—	—	1	9	39%	17%	1	2	6	4	66%	100%	
Western Canada ..	2	20.4	9	—	5	—	1	—	3	33%	—	—	—	3	—	100%	—	
Barnacle .. ..	1	23.6	4	—	—	—	1	—	3	75%	50%	—	—	—	2	—	67%	
Red-breasted .. ..	1	15.6	5	—	4	—	—	—	1	20%	—	—	—	1	—	100%	—	
Greylag .. ..	1	18.4	7	—	6	—	—	—	1	14%	—	—	—	1	—	100%	—	
Lesser White-fronted	1 + 1f	1.5	11	—	7	—	2	—	2	18%	—	—	—	2	—	100%	—	
Emperor .. ..	2	30.4	16	1	9	1	—	2	3	19%	33%	1	1	1	4	33%	100%	
Bar-headed .. ..	2	15.4	13	2	2	—	—	2	7	54%	89%	—	—	7	6	100%	75%	
Greater Snow ..	3 + 1f	3.5	69	4	33	—	2	1	28	40%	50%	2	—	15	3	54%	30%	Several died from what appeared to be epilepsy
Lesser Snow .. ..	1	18.5	5	1	2	—	—	—	2	40%	—	—	—	1	—	50%	—	

Blue Snow	..	..	1+1f	29.4	9	—	6	—	—	—	4	44%	71%	—	1	3	6	75%	60%	
Ross's Snow	..	..	3	4.5	16	—	3	—	—	4	9	56%	23%	—	—	4	2	44%	50%	
Ruddy Shelduck	..		1	28.4	6	—	6	—	—	—	—	—	—	—	—	—	—	—	—	
N.Z. Shelduck	..		1	11.4	8	—	6	—	—	—	2	25%	14%	—	—	2	1	100%	100%	
Egyptian	..	..	2	14.3	31	—	16	—	1	1	13	43%	77%	—	—	13	9	100%	90%	
Upland	..	..	1	2.4	11	—	11	—	—	—	—	—	—	—	—	—	—	—	—	
Ruddy-headed	..		1	26.4	16	—	16	—	—	—	—	—	—	—	—	—	—	—	—	
Cereopsis	..	..	1	13.2	5	—	1	—	—	—	4	80%	50%	—	—	4	—	100%	0%	
Marbled Teal	..		1	?	9	—	—	—	—	—	9	100%	—	—	—	1	—	11%	—	
Puna Teal	..	..	1+1f	10.4	15	1*	5	—	2	2	5	33%	43%	—	—	1	—	20%	0%	*Taken by visitor
Red-billed Pintail	..		1	?	4	—	4	—	—	—	—	—	—	—	—	—	—	—	—	
Bahama Pintail	..		3	5.5	45	—	9	—	1	1	34	76%	88%	—	—	23	9	69%	64%	
Chilean Pintail	..		1	27.3	14	—	5	3	1	5	—	—	25%	—	—	—	2	—	50%	
Pintail	..	..	3	30.3	28	—	9	2	7	3	7	25%	43%	—	—	4	3	56%	33%	
Black Duck	..	..	2	26.3	24	—	4	—	—	—	20	83%	69%	—	5	3	11	15%	44%	
Mottled	..	..	1	24.4	6	—	—	—	2	—	4	66%	58%	—	—	4	5	100%	71%	
Florida	..	..	1	19.3	9	—	9	—	—	—	—	—	—	—	—	—	2	—	—	

[continued]

TABLE IX—*continued*

Species	Breeding pairs	Date of first egg	No. of eggs	Taken by vermin	Infertile	Broken by hen	Addled	Dead in shell	Hatched	% Hatched of eggs laid	% in 1949	Crushed by hen	Killed by predators	Reared	Reared in 1949	% Reared of eggs hatched	% in 1949	Remarks
Spot-billed .. ..	1	19.3	12	—	5	—	—	—	7	58%	42%	—	—	—	3	—	23%	5 killed by Hen
Australian Grey Duck	2	19.3	28	—	12	—	—	1	15	55%	62%	—	—	11	4	73%	40%	1 m. 10 f. Two left with parents disappeared
African Yellow-billed	2+1f	21.3	30	—	12	3	5	7	3	10%	41%	—	2	—	3	—	25%	
Gadwall .. ..	3+1f	6.5	28	—	5	—	1	1	21	75%	83%	—	—	20	8	94%	19%	1 reared by the mother
Wigeon .. ..	3	24.4	30	2	11	4	3	—	10	33%	43%	—	—	10	6	100%	60%	
American Wigeon ..	3	18.5	21	—	10	—	4	3	4	20%	26%	—	—	—	8	—	89%	All weaklings
Chiloë Wigeon ..	2+1f	22.4	24	—	18	—	4	—	2	8%	53%	—	—	—	12	—	67%	
Cinnamon Teal ..	5	8.4	50	—	4	—	3	5	38	76%	63%	1	1	19	2	50%	8%	1 hatched by parent and disappeared
Garganey .. ..	1	?	?	—	?	—	—	—	6	—	29%	—	—	—	1	—	50%	Hatched by the mother and only 2 caught
Shoveler .. ..	3	18.5	40	—	9	1	9	—	21	52%	95%	1	—	10	12	49%	63%	1 died through swallowing a whole beech-nut
Red-crested Pochard	3+1f	26.3	32	—	6	2	—	—	24	75%	56%	—	2	2	14	8%	41%	



Rosy bill	.. ..	3	13.5	38	—	6	—	—	6	26	69%	48%	—	2	8	14	34%	67%	
Pochard	.. ..	2	18.4	9	—	—	—	2	—	7	77%	56%	—	—	7	2	100%	40%	
Red head	.. ..	1	7.6	3	—	3	—	—	—	—	—	87%	—	—	—	10	—	77%	
Scaup	.. ..	2	29.5	14	—	2	—	2	4	6	43%	0%	—	2	2	3	33%	0%	
Maned Goose	..	1	24.8	10	—	10	—	—	—	—	—	—	—	—	—	—	—	—	Arrived from Australia, 23.7.50
Mandarin	.. ..	3	27.4	18	—	11	—	—	2	5	28%	—	—	—	3	2	60%	—	
Carolina	.. ..	15?	22.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Experimentally incu- bated at 99°F.	.. ..	..	..	47	—	16	—	10	16	5	—	—	—	—	—	—	—	—	Hatched on 39th-41st day
Incubated for 15 days at 99°F. and 18 days at 102°F.	.. ..	..	..	40	—	14	—	7	1	18	—	—	—	—	8	—	—	—	Hatched on 33rd-34th day
Incubated by the mother	.. ..	..	..	29	6*	9	—	—	—	14	—	—	—	—	9	—	—	—	*Taken by visitor. Rest hatched on 29th-30th day
Incubated by bantam	.. ..	..	..	190	—	56	1	25	30	78	—	—	6	2	37	—	—	—	Hatched on 29th-30th day
Total Carolinas	.. ..	..	..	306	6	95	1	42	47	115	—	38%	6	2	54	72	—	47%	
Red-breasted Merganser	1 f	2.6	7	—	7	—	—	—	—	—	—	—	—	—	—	—	—	—	
Ruddy Duck	.. ..	2	26.5	11	—	1	—	—	—	10	—	91%	—	1	2	20	—	—	

[continued]



	EGGS FROM ICELAND																	
Scaup .. ..	—	—	12	—	3	—	1	1	7	58%	—	—	—	3	—	43%	—	
Barrow's Goldeneye..	—	—	14	—	5	—	2	3	4	29%	—	—	—	2	—	50%	—	
Scoter .. ..	—	—	11	—	3	—	1	—	2	18%	—	—	—	—	—	—	—	
Long-tailed .. ..	—	—	12	—	6	1	1	2	2	17%	—	—	—	—	—	—	—	
Merganser .. ..	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	
							BROUGHT AS YOUNG											
Greylag .. ..	—	—	3	—	—	—	—	—	—	—	—	—	—	1	—	33%	—	
Shelduck .. ..	—	—	20	—	—	—	—	—	—	—	—	—	1	13	9	65%	69%	
							HYBRIDS											
Swan x Domestic Chinese 1-1f	—	—	14	—	7	—	—	—	7	50%	—	—	—	7	—	100%	—	
Bean x White-fronted	—	—	4	—	2	—	—	—	2	50%	—	—	—	2	—	100%	—	
Blue x Lesser Snow	—	—	12	—	2	—	2	2	6	50%	—	1	—	3	—	50%	—	
Tundra x Lesser Snow	—	—	7	—	—	—	4	—	3	43%	—	1	—	1	—	33%	—	
GRAND TOTAL	—	—	1371	39	524	24	119	112	551	40%	59%	14	24	282	274	52%	42%	

## PATHOLOGY

The Trust's thanks are due to Mr. D. W. Menzies and Mr. J. A. J. Venn of the Ministry of Agriculture Veterinary Investigation Centre, Langford, for post-mortem examinations and bacteriological investigations. With their help it has been possible to make a much more scientific approach to the problems of disease in the collection than had previously been possible. Much progress has already been made in finding cures for the ailments which have hitherto caused casualties. As more and more data are amassed it is confidently expected that deaths from many of the diseases will be greatly reduced.

The Trust is also most grateful to Mr. C. S. Adams for his services in veterinary surgery.

A tabular summary of the results of the post-mortem examinations performed is set out below. This does not purport to be a complete record of the deaths in the collection during the year : a small number of adults are omitted because of insufficient information, and the ducklings reported on represent only a sample of the total losses (practical difficulties in the handling of material in summer prevent more complete coverage).

It will be seen that, though the largest number of casualties is listed under 'Infectious and Parasitic Diseases', in no case did any disease attain epidemic proportions. The great variety of causes of death is perhaps the most striking feature of the summary.

In the table the class 'Young' comprises birds less than four months old.

Contributory causes of death are not included ; no individual appears more than once in the summary. Birds dying within two days of arrival in the collection are not included.

## TREATMENT

### Gizzard Worm (*Amidostomum anseris*)

Both Phenothiazine and carbon tetrachloride have been successfully used in the treatment of this parasite. The latter, in doses of 1 cc., acts more rapidly, but is more dangerous if the birds' general condition is much lowered. Few deaths occurred when infestation was correctly diagnosed in time.

### Aspergillosis

So far as is known there is no cure for birds sufficiently affected by this mould disease for accurate diagnosis. Prophylaxis recommended by Biester and Schwarte (*Diseases of Poultry*, pp. 407-8) is confined to the avoidance of mouldy food and litter, but other observations indicate that the spores of *Aspergillus fumigatus*, the most pathogenic species, are airborne. Thus they are less likely to be inhaled if grain is wet when fed to the birds.

There is some reason to believe, as indicated by Yealland (*Mycosis in Birds*, *Avicultural Magazine*, Vol. 55, pp. 20-22), that potassium iodide is a prophylactic, and this is now being given to the Sea-ducks in the food.

Further scientific work on this disease is proposed.

**TABLE X**  
**CAUSES OF DEATHS IN THE COLLECTION**  
 (May 1950—April 1951)

Cause of Death	Species	Young	Adult	Total
<b>Infectious and Parasitic Diseases</b>				
Paratyphoid ( <i>Salmonella</i> ) ..	Red-billed Whistling Duck	1+	—	
	Puna Teal	1	—	
	Bahama Pintail	1+	—	3+
Renal coccidiosis .. ..	Ross's Goose	—	1	1
Intestinal coccidiosis .. ..	Rosybill	1	—	
	Eider	—	1	2
Aspergillosis .. .. .	Upland Goose	1	1	
	Andean Crested Duck	—	1	
	Red-crested Pochard	—	1	
	Maned Goose	—	1	
	Eider	—	1	6
Gizzard Worm ( <i>Amidostomum</i> <i>sp.</i> )	Chinese Goose	—	2	
	Grey Lag Goose	—	1	
	Greater Snow Goose	—	1	
	Upland Goose	—	2	6
Cestode infestation ( <i>Hymeno-</i> <i>lepis spp.</i> )	Bahama Pintail	1	—	
	Shoveler	—	1	
	Pochard	—	1	
	Carolina Duck	—	1	4
Trematode infestation ..	Shelduck	—	1	
	Bahama Pintail	1	1	3
<b>Diseases of Circulatory System</b>				
Inflammation of heart .. ..	Barnacle Goose	—	1	1
Lesion in spleen .. .. .	Red-breasted Goose	—	1	1
Heart failure .. .. .	Grey Lag Goose	—	1	1
<b>Diseases of Respiratory System</b>				
Acute congestion of lungs ..	Emperor Goose	—	1	
	Ruddy Duck	—	1	2
Pneumonia .. .. .	Red-billed Pintail	—	1	1
Infection of syrinx .. ..	Barrow's Goldeneye	—	1	1
<b>Diseases of Digestive System</b>				
Impaction of intestine .. ..	Fulvous Whistling Duck	—	1	1
Impaction of gizzard .. ..	Florida Duck	—	1	1
Cirrhosis of liver .. .. .	Richardson's Goose	—	1	1
Fatty degeneration of liver ..	Black Duck	1	—	
	Cinnamon Teal	1	—	
	Red-crested Pochard	1	—	3
Acute enteritis .. .. .	Florida Duck	—	1	1
<b>Diseases of Urino-genital System</b>				
Nephritis .. .. .	Lesser White-fronted Goose	—	1	
	Barrow's Goldeneye	—	1	2
Nutritional Diseases .. ..	Red-billed Whistling Duck	3	—	
	Greater Snow Goose	1	—	
	Eider	—	3	7

[continued]

TABLE X—continued

Cause of Death	Species	Young	Adult	Total
<b>Violent and Accidental Deaths</b>				
Predators .. .. .	Swan Goose	—	1	
	Greater Snow Goose	—	1	
	Shelduck	—	1	
	Abyssinian Blue-winged Goose	—	1	
	Puna Teal	1	—	
	Mottled Duck	2	—	
	Blue-winged Teal	—	1	8
Drowning .. .. .	White-faced Whistling Duck	—	1	
	Swan Goose	1	—	
	Scoter	1	—	3
Fighting .. .. .	Mottled Duck	—	1	1
<b>Destroyed</b> (because of senility, injury, etc.)	Australian Shelduck	—	1	
	New Zealand Shelduck	—	1	
	Red-billed Pintail	—	1	
	Bahama Pintail	1	—	
	Australian Grey Teal	—	2	
	Gadwall	1	—	
	Spur-winged Goose	—	1	8

TABLE XI  
SUMMARY

Mortality Factors	Age of Birds		Total
	Young	Adult	
Infectious and Parasitic Diseases .. .. .	7	18	25
Diseases of Circulatory System .. .. .	—	3	3
Diseases of Respiratory System .. .. .	—	4	4
Diseases of Digestive System .. .. .	3	4	7
Diseases of Urino-genital System .. .. .	—	2	2
Nutritional Diseases .. .. .	4	3	7
Violent and Accidental Death .. .. .	5	7	12
Destroyed .. .. .	2	6	8
	21	47	68



## THE SCIENTIFIC VALUE OF A GROUP COLLECTION OF LIVE ANIMALS

Konrad Z. Lorenz

*Dr. Lorenz began a stay of six weeks at Slimbridge, the first, it is hoped, of a series of regular visits, during April, 1951. The results of his particular studies will be reported fully in next year's report. Meanwhile he gives his impressions of the value of the Trust's collection in the following article.—ED.*

All biological science has begun its career with *collecting*, and it is worthy of psychological consideration that nearly all really successful biologists have, in their own lives, gone through a period in which they repeated, individually, the history of their science. There are very few of them, indeed, who have not been given to collecting, as a hobby, at an early stage of their scientific development. It is not only legitimate, but absolutely necessary, that the study of animals or plants should begin with simply and modestly collecting knowledge of 'all there is' before proceeding to the more ambitious task of causal analysis. If some modern physiologists show a certain tendency to look down on museum collections, systematics and comparative anatomy, they forget that these particular branches of biological science have given to all others their common fundamental—the theory of evolution.

For certain reasons, which need not concern us here, the study of animal behaviour did not, until a very recent date, introduce the evolutionary viewpoint into its consideration—very much to its own detriment. The fact that all the innate traits of animal behaviour can—and therefore must—be studied from the common viewpoint of phyletic descent, remained necessarily hidden from scientists who never studied the behaviour of a whole group of species, but confined themselves to just one kind of animal, chosen exclusively for the single reason that it was the easiest to obtain, to keep and to breed. The basic discovery which has since given rise to a new branch of behaviour study—Comparative Ethology—is, in itself, very simple: certain innate behaviour patterns are not only common to all the individuals of a species, but very often to much more comprehensive groups of animals as well. In other words, these innate behaviour patterns have, among the several species, genera, families, and still larger groups of animals, exactly the same type of distribution and, with decreasing relationship, the same grading of similarity into dissimilarity, as we find in the comparison of bodily characters.

From this the important inference is, obviously, that these behaviour patterns are just as old as any structural properties whose systematic distribution is about the same. To people who regard animal behaviour as something extremely variable and unrestrictedly modifiable these facts seem very surprising and even unbelievable. Yet, so far from being 'slippery stuff' to use in systematic comparison, innate behaviour patterns are, in most cases, extremely conservative characters, indeed, much more so than the specific form of bones and other hard structures. What is hardest and least perishable in the museum, need not necessarily be so in evolution.

Let us look at just one example: since the very beginnings of ornithological systematics, the structure and proportions of the skull and bill have been considered as characters of paramount importance and reliability. A group of

*Anatidæ*, the so-called 'Geese', were lumped together on the strength of just one character: in all of them the lamellæ of the bill have been converted into sharp, horny teeth in adaptation to grass-eating, while their skull has assumed, for the same reason, a typical high profile, calculated to heighten the chewing pressure of the mandibles. With the true geese, like the Greylag, Bean, White-front, Pinkfoot, Snow, Bar-headed, Canada, Brent, Barnacle, etc., were included the Andean, Upland, Kelp, etc. (genus *Chloëphaga*), the Abyssinian Blue-winged Goose (*Cyanochen*), the Australian Cape Barren Goose (*Cereopsis*), the Spur-winged Goose (*Plectropterus*), the Maned Goose (*Chenonetta*), and even the tiny Pygmy Geese of the genus *Nettapus*. All were considered as one family. Subsequent close investigation, in which the consideration of innate behaviour patterns played an important part, revealed the indubitable fact that these birds, so far from being closely related to each other, really belong to at least three different groups, the true Geese, the Sheldrakes and the Perching Ducks. The Genus *Chloëphaga*, the Abyssinian Blue-winged, and the Cape Barren Goose, have, all of them, evolved from the Sheldrake family, but, in all probability, independently from each other and in very different parts of the world. The Spur-winged Goose belongs to one group of the Perching Ducks and is allied to the Muscovy Duck, while the Maned Goose and the Pygmy Geese belong to another, and are closely related to the Mandarin and Carolina Ducks. All instinctive behaviour patterns of these birds, particularly those of courtship display, are quite typical of the respective groups to which they belong. None of these innate movements are common to all so-called 'Geese'. The fact that the latter do not, by any means, represent a phyletically coherent family is further emphasized by a great number of other morphological characters.

It is, on principle, impossible to attribute a fixed and constant systematic value to any single character, because one and the same structure may, in different groups, undergo evolutionary change at quite different speeds. What is an exceedingly conservative, slow-changing property in one family or order, may be very plastic in another. In the *Anatidæ*, for example, the colour markings of the downy young are evidently most resistant to evolutionary change, while the form of head and bill is extremely plastic; in the order of Rails (*Rallidæ*) the very opposite is true. The 'relative conservativity' of every single property must, therefore, be gauged in every single instance by a thorough comparison with as many other characters as possible. If, in a group of animals represented by a considerable number of forms, we amass as many comparable characters as possible, our conclusions become more reliable in geometrical proportion to the number of characters considered. The historical correctness of our conclusions increases not only with the number of agreeing 'documents' which point in one direction, but the significance of each document is increased with the number of others with which we are able to compare it, in order to ascertain its particular age and value.

This is precisely why the phylogeneticist is forever on the lookout for new, comparable characters; and also why he prefers to work on groups which are rich in species. A group consisting exclusively of one or two isolated species with nothing but 'missing links' to join it together, and on to other groups, is obviously not a favourable object for evolutionary studies. On the other hand, in a group with many species, every taxonomic character can be studied in many different forms and stages of differentiation. Charles Otis Whitman and Oskar Heinroth, the pioneers of Comparative Ethology, both chose for investi-



gation a group which fulfilled these requirements: the former worked on the pigeons, the latter on the ducks and geese. It is an interesting historical fact that both these scientists were primarily phyleticists rather than behaviour students and that it was their assiduous search for comparable characters that induced them to bring innate behaviour patterns into consideration. Thus, Comparative Ethology originated in the service of the study of evolution.

Thus we may infer that the studies of evolution in general and of comparative ethology in particular are dependent on a suitable object of study which possesses certain essential qualities. The discovery of a law of nature has always been dependent upon the selection or discovery of a favourable object of study. If we review these essential qualities we find ourselves simultaneously expounding the scientific value of collecting and keeping live animals belonging to one systematic group. For the purpose of the studies in question it is necessary to keep live animals in perfect condition, in order to investigate their innate behaviour patterns. It would be absolutely impossible to acquire an extensive comparative knowledge of these patterns by field observation alone, even if one genus were not, as it so often is, distributed all over the globe. The group chosen for an object of a study ought, therefore, to be technically easy to keep and to breed; only if the animals display the whole inventory of their instinctive activities are we furnished with a solid basis for our comparison of behaviour. The group must also be rich in innate behaviour patterns and, last but not least, it must contain an abundance of sub-orders, families, genera and species, and there must be enough gradations and transitions which link up the under-groups.

There can be hardly any doubt that, among all the groups of animals which are available in captivity at present, the order of *Anatidæ* is the one which fulfills all these requirements in the most ideal manner. Though C. O. Whitman worked on the order of pigeons and though valuable work has been done on Cichlid fishes, the *Anatidæ* still rank first as an object of evolutionary and ethological study. A number of prominent phylogeneticists such as Heinroth, Mayr, Delacour, von Boetticher and others have given special attention to this order. The writer of these lines, as a comparative ethologist, has found the unique collection of *Anatidæ* at the New Grounds a wonderful subject for his investigations. The word 'unique' is not used here in the complimentary but in the literal sense. There is not, in all the world, another collection of *Anatidæ* as complete, and what is more, there is no other collection of any group of live animals which could, for the type of evolutionary investigation sketched in this article, be exploited to such advantage as that of the Severn Wildfowl Trust.

Systematics and taxonomy are regarded by many people as tedious subjects. Some biologists even think that phylogenetic investigations performed by the method of systematic comparison are something rather antiquated, something that was all right in the days of Darwin and Wallace, but rather out of date at the present time. So far from having shot its bolt, however, phylogenetics is only beginning to get, from other branches of biological science, the consideration which it merits. The current modern physiology of the central nervous system, to cite only one instance, would do well to give more thought to phylogenetic considerations. The 'simple' reflex-arc, still regarded by many physiologists as *the* basic element of all central nervous structures and functions, is, in reality, a phyletically extremely 'young' acquisition which does not occur at a lower stage of evolution than birds and mammals. But apart from their everlasting scientific value, phylogenetic studies done by the good old method of

comparison of homologous characters are a superlatively alluring occupation. The attempt to disentangle the course which evolution has taken ages ago, by the simple means of comparing the similarities and dissimilarities of living animals, and thus delving into times a thousandfold more remote than the earliest dawn of human history, is among the most fascinating enterprises that the human mind can undertake. To me, at least, it always causes a truly reverential thrill, whenever comparative study leads to some real insight into the blood-relationship of different species and allows us, to a certain extent, to reconstruct their latest common ancestor!

## PREENING STUDIES

By D. F. McKinney

As briefly reported in the 3rd Annual Report a study has been made, since November, 1949, of the behaviour of the *Anatidæ*, with particular emphasis on such everyday activities as preening, bathing, shaking, stretching, etc. Although the investigation is still incomplete, a record of its nature and scope may be of interest. The method has involved direct observation and description of the birds' movements, with the assistance of still and ciné photography. The results, largely of a detailed descriptive nature, are not yet sufficiently complete for generalization.

The Mallard has been selected for close study and the behaviour of this species provides a model with which to compare that of its relatives. Preening, bathing, shaking, stretching and other similar activities have been studied in the adult Mallard. Their development has been observed in ducklings. Their relations to one another and to various stages of the life history have been examined.

In order to cover one important part of the life history, observations have been made on the incubation behaviour of the Mallard. The most interesting period has proved to be at the time of hatching. As soon as the ducklings begin to move about in the nest, the duck performs very frequent oiling preens. The function of this behaviour would seem to be the distribution of oil over the ducklings before they leave the nest. It is hoped to extend these observations with a view to investigating the stimuli which elicit this interesting behaviour.

Although of considerable intrinsic interest, these 'everyday' behaviour patterns are not, however, particularly suitable as taxonomic characters for the determination of relationships within the *Anatidæ*. They are on the whole very deeply ingrained, and from an evolutionary point of view much 'older' than the display-movements which have been studied by Lorenz. It is possible, however, that such movements might prove to be very useful when examined in a number of the larger groups of birds. This has been done by Heinroth, notably with the scratching movements of birds. It is hoped that the descriptive material which is being collected may provide a basis for such comparisons.

Much recent research on animal behaviour has drawn attention to the 'displacement activity', and the existence of 'displacement-preening' is well-known in the *Anatidæ*. This group, moreover, is especially interesting in showing many states of the incorporation of such activities in the display. In some species, such as the Mandarin, the 'false-preening' movements are highly ritualized and form important elements in the display, while in other species it is often difficult to be sure whether one is watching 'false-preening' or not.

In the present study, the incorporation of other every-day movements in display is being investigated. For example, wing-shaking movements are highly developed in the aggressive behaviour of Canada geese. In the Common Sheldrake, the 'throw-up' movement used by the adult male in the breeding season is derived from the ordinary shaking movement.

The head-shaking movements are particularly interesting in *Anatidae*. These are of several different types and their normal function is the removal of water, dirt or loose feathers from the head or beak. In many species, however, these movements are used during display, while they are also used in various forms in the well-known 'pre-flight' movements.



## SWEDEN 1950

THE Trust was represented at the Xth International Ornithological Congress held in June, 1950, at Uppsala, Sweden, by the Director and the Assistant Secretary, Miss P. Talbot-Ponsonby. Two films were shown by the Director, one of the Trust's work and the other of his expedition to the Perry River region of Arctic Canada (recorded in the Third Annual Report).

After the Congress the Trust's delegates took part in excursions to Jämtland and Abisko in Lapland, and later, accompanied by a member, Dr. J. D. Mills and Dr. Finnur Gudmundsson, the Icelandic delegate, made a trip to the Lapland breeding and moulting grounds of the Lesser White-fronted Goose, *A. erythropus*. The principal object was to catch and bring back alive three male Lesser White-fronts for three hand-reared breeding females in the collection at the New Grounds. The success of this mission is described in the following note contributed by the Director.

Among the mountains of Torne Lappmark, near the border between Sweden and Norway, is the summer home of the most beautiful of the grey geese—known locally as the Mountain Goose, and to us by the much less romantic name of Lesser White-fronted Goose.

On 1st July we reached the highland lakes just above the line of birch woods and saw our first Mountain Geese—a party of fourteen, swimming below us on the smooth water of a small tarn. During the following week, with a Lapp hut as our base we walked over the surrounding moors and hills. Evidently the geese were not breeding extensively in this area ; we saw only one brood of 5 goslings with their parents, although many broods had been seen at the same spot by our Swedish guide, Knut Larsen, during the previous summer. About 200 adult geese, however, were living on these lakes and it seemed that as soon

as they became flightless we should have a good chance of catching the three ganders we needed. But in the days that followed we found that catching them was no easy matter even though they had moulted their flight feathers. The first bird which we managed to run down turned out to be a female. She was therefore ringed and released.

The daily technique was to cross the big lake by boat and then walk round the most likely tarns, stalking up to each in the hope of spotting the geese before they spotted us, usually quite a forlorn hope. When they did spot us they immediately began to run up the nearest and steepest available mountain.

Once, in pursuit of a flightless goose, I ran up a col and came over the crest upon the splendid sight of a pair of Rough-legged Buzzards diving in turn at a White-tailed Eagle. The eagle was sitting on a rock ducking its head at each attack by the mobbing buzzards. There were Long-tailed Ducks, Velvet and Black Scoters, Goldeneyes, Phalaropes, Long-tailed Skuas, Merlins, Lapland Buntings, Redpolls, Wood Sandpipers, and Red-throated Divers in the area, and we caught a Lemming.

Towards the end of our week, when Mills and Gudmundsson had already left, we came one evening round a point on the lake, in Knut's boat with his outboard motor on the stern. There on the water were about thirty geese and it was soon clear that many of them were flightless. They made for a huge cake of ice which lay at the foot of a precipitous cliff. After running across the ice some tried to hide in the narrow strip of open water along the shore, while others began to climb the cliff. Further up it became sheer; for once the geese were cut off. We landed in their rear, and for the next half-hour, rock climbing was added as a new ingredient to the pursuit of geese. One was caught trying to climb a near-vertical wall of rock and fluttered down stern first into my arms, another was caught by Knut, and a third made off back into the lake where, with oars, and later with the outboard motor, we pursued him. It was half an hour before he could be persuaded to go ashore again. The first time he did so I over-ran him and he got back into the lake again. After another half-hour he sneaked ashore for the second time and set off uphill. I followed him at lung-bursting speed up to a col. When I got there he had disappeared. I cast around and just as I was giving up the unequal struggle I flushed him from the dwarf birch. He went off down hill at full speed, I after him, taking giant strides on the steep hill side. I ran all out for 200 yards and overtook him only ten yards from the lake. We were both exhausted and I sank to the ground with the little gander in my arms.

One of the three we had caught, being a female, was ringed and released. We had only two ganders and we needed three. On the following day, which was our last, we surprised about twenty moulting geese at the head of a bay in the main lake. We had already walked nearly twenty miles and were returning empty-handed in the boat. By the time we had landed in pursuit, the geese had a good start, but the three of us divided, each to chase a separate bird. Yet another breath-taking all-out run was needed before we rejoined each other, each carrying a Mountain Goose. Two were males and one a female. But we only kept one—to make up the three we needed. The other two were ringed and released again.

And so we returned with wild-caught ganders to pair with the three hand-reared females at the New Grounds.

(NOTE.—Young have been reared from one of these pairs during the summer of 1951.)



## GENERAL ACTIVITIES & ADMINISTRATION

### VISITORS

No less than 257 organized parties—83 of them from schools—have visited the New Grounds during the year. Normally, only one party is booked a day, in order to avoid overcrowding, and to enable the parties to be shown round by the Wardens. Even then the pressure on the Wardens from individual visitors and small groups has been so great that the whole question of arrangements for visitors has had to be reviewed. Three duplicated sheets have been prepared. The first is a brief guide to the enclosures and the collection, mainly for those visiting the New Grounds for the first time. The second is for Members who are being taken to the observation huts in order to watch the wild geese. It is essential that Members visiting the Trust during the winter months should make certain of obtaining *and reading* this sheet before proceeding with the Warden to the observation huts. The third constitutes a kind of permit, and is issued at the discretion of the Curator to those Members who have already been to see the geese not less than six times. This sheet enables them to proceed unaccompanied, on condition that they have inquired first from the Curator where the geese are feeding and whether there are any special arrangements for the day. It gives details of all the places where particular care must be taken not to disturb the geese. During the last season certain Members have made little or no attempt to follow the directions of the Wardens and Honorary Wardens; as a result the Council feels bound to give the warning that it may, under the terms of Rule 5(3), refuse to accept the subscription renewal of any Member who attempts to use the observation huts without such a permit.

The new pens, which were completed early in 1950, have proved a great success, although the need of a hard path leading through them became more than ever apparent during the wet winter. Public lavatories have been erected at a cost of £400.

### ‘BEATRICE’

The Trust's Narrow Boat, *Beatrice*, took part in the Market Harborough Festival and Rally of Boats in August, 1950. The boat was taken to Market Harborough by Lord Geoffrey Percy with a crew provided by the Inland Waterways Association. Owing to the close contact between the Severn Wild-fowl Trust and the Inland Waterways Association (the Director of the Trust is a Vice-President of the I.W.A.), it was not considered suitable for *Beatrice* to compete for the various prizes and cups, but it was evident that she compared favourably with the other converted Narrow Boats present at the Festival and was much admired. She returned to Slimbridge in the care of Mr. Robert

Aickman, Chairman of the Inland Waterways Association, after a total absence of three weeks.

The catering and cooking is now in the able charge of Miss Margaret Timbrell, under the supervision of Mrs. S. T. Johnstone. During the period 31st March, 1950, till 30th April, 1951, 272 visitors have stayed on board. The Council would like to see more visitors using *Beatrice*, especially during the summer months. Members can help by recommending to their friends this comfortable hostel accommodation which is available to visitors whether they are Members or not.

### FINANCE

The Accounts and Balance Sheet for the year ended 31st December, 1950, are on pp. 56-57. It will be noted that expenditure exceeded income by £15 13s. 8d. The Council, however, is happy to announce that a magnificent grant of £5,000 was received from the Pilgrim Trust. The Council placed £4,000 of this grant in a Reserve Account for at least one year and proposed that Capital Development during that period be curtailed in order that the Trust might consolidate its financial position.

A further gift of £500 was made by the Trustees of the W. Graham Robertson Charity Fund (although it does not appear in the Accounts for 1950). The Council wishes to place on record its gratitude for these splendid contributions to the Trust's financial welfare.

The Second Annual Report and 'Key to the Wildfowl of the World' made a profit of £501, and the sale of 13,000 Christmas Cards, £380.

The Gift Membership Tokens have been a considerable success, but the Council would like Members to use them even more in order to bring our membership to 5,000.

### BULLETINS

Periodical Bulletins have been issued since September, 1950, covering the ornithological work, and in the Council's opinion these form an admirable channel by which Members can be kept in touch with the most recent activities undertaken by the Trust. They are all the more valuable in view of the long but unavoidable time-lag before the Annual Report appears.

### DIRECTOR'S LECTURES

The Hon. Director, Mr. Peter Scott, gave 31 lectures in the course of the year. The sum raised from these, including the sale of literature, was £1,256 10s. 5d. It should be pointed out that *all* fees are paid to the Trust. The films shown included the Perry River Expedition (later stolen during a car theft and not recovered), the Lapland trip, the general film of the Trust's work and the rocket-netting film. Notice of the Director's forthcoming lectures is now given in the Bulletins.

Once more the Council wishes to pay tribute to the untiring efforts of the staff. The present prosperity of the Trust is very largely attributable to the enthusiastic spirit in which they have continued to work.

### WANTS

Garden seats; carpentry tools; hampers of any size; garden tools, and 10,000 cuttings of *Lonicera nitida*.

## FOURTH ANNUAL GENERAL MEETING

### MINUTES

THE Fourth Annual General Meeting of the Severn Wildfowl Trust was held at the Royal Society of Arts, 6, John Adam Street, Adelphi, London, W.C.2, on Wednesday, 28th March, 1951. The President, Field-Marshal Lord Alanbrooke, was in the chair. The Minutes of the Third Annual General Meeting, having been circulated to Members in the printed Report, were taken as read and signed by the President.

The Minutes of the Extraordinary General Meeting, held at Market Harborough in the Narrow Boat, *Beatrice*, on 16th August, 1950, were read by the Hon. Secretary and signed by the President.

The adoption of the Report of the Council together with the Balance Sheet and Accounts for 1950 (which had been circulated to Members in printed form), was proposed by the President, seconded by the Director, and carried unanimously.

The re-election of the following retiring Council Members was proposed by Mr. Keith Miller Jones and seconded by the Hon. Secretary, Mr. Michael Bratby : Guy Benson, Esq. ; R. A. H. Coombes, Esq. ; C. T. Dalgety, Esq. ; H. H. Davis, Esq. ; James Fisher, Esq. The motion was carried.

The re-election of the officers *en bloc* (as shown on page 2) was proposed by Major R. C. R. M. Clarke, seconded by Mr. G. T. Wilkins, and carried unanimously.

The re-election of Messrs. S. J. Dudbridge & Sons of 8, Lansdown, Stroud, was proposed by the Treasurer, Sir Archibald Jamieson, seconded by the Hon. Secretary, Mr. Michael Bratby, and carried unanimously.

A glowing tribute to the work of the Trust was paid from the body of the hall by Mr. H. K. Hallam, who suggested that Members should be asked to pay for their Annual Reports in view of the high cost of these publications. The Director replied that the Council would consider this matter, but drew attention to the fact that a profit had been made on the sale to non-members of the first two Reports. More general support appeared to be given, however, to a plea that the Reports should continue to be free to Members, even if it should necessitate the increase of the subscription.

Mr. J. S. Gordon-Clark asked whether it would be possible to have a separate enclosure at the New Grounds for the British Waterfowl. The Director replied that this had been considered before, and explained the very great difficulties of keeping all the British species in one pen at present. British geese, for example, are kept in all the pens and even then there is scarcely enough grass for them all. To confine them to one pen would therefore be quite impossible. Another point was that many ornithologists particularly liked to be able simultaneously to compare related birds from, say, Britain and America, side by side in the same pen. He said that as soon as the Trust had acquired more ground, which it hoped to be able to do shortly, a special collection of British species only would be formed in one pen.

After the meeting, the Director showed his colour films of the Decoy and Wild Geese at the New Grounds, and of the Trust's Rocket-netting Expeditions.

Proceedings then terminated.

## THE SEVERN WILDFOWL TRUST

## INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st DECEMBER, 1950

EXPENDITURE				INCOME			
	£	s.	d.		£	s.	d.
To Rent, Rates and Insurance .. .. .	271	13	9	By Subscriptions .. .. .	3,997	11	3
„ Wages and National Insurance .. .. .	3,333	7	11	„ Donations .. .. .	288	13	6
„ Food for Waterfowl .. .. .	1,348	1	3	„ Sale of First Annual Report .. .. .	41	0	9
„ Purchases and Transport of Wildfowl and Eggs .. .. .	530	10	9	„ Sale of Booklets .. .. .	180	17	7
„ Purchases of Hens for Sitting .. .. .	172	13	1	„ Sale of Surplus Waterfowl .. .. .	737	16	0
„ Carriage on Birds sold .. .. .	122	16	6	„ Fees and Collections at Lectures .. .. .	1,431	11	10
„ Materials (Wood for Observation Huts, Wire Netting, Coops, etc.) .. .. .	1,097	16	11	„ Sale of Christmas Cards .. .. .	640	1	9
„ Minor Replacements and Repairs .. .. .	26	9	6	„ Narrow Boat takings .. .. .	399	11	2
„ Miscellaneous .. .. .	253	3	7	„ Gate takings .. .. .	825	16	1
„ Staff Travelling Expenses .. .. .	378	12	1	„ Sale of Books and Calendars .. .. .	133	2	8
„ Telephone .. .. .	99	12	2				
„ Printing and Stationery—General .. .. .	495	6	10	„ Special Donations for Development .. .. .	506	1	0
„ Printing of Christmas Cards .. .. .	260	2	8	„ Carnegie Trust (final payment) .. .. .	1,150	0	0
„ Bank Charges .. .. .	53	5	10				
„ Office Expenses, Postages, etc. .. .. .	233	0	5	„ Sale of Second Annual Report .. .. .	1,113	0	8
„ Narrow Boat, <i>Beatrice</i> , Running Expenses .. .. .	756	7	0				
„ Land Rover Expenses .. .. .	193	10	4	„ Sale of 'Key to Wildfowl of the World' .. .. .	249	17	3
„ Legal Charges re Headquarters' Cottage .. .. .	47	6	4				
„ Legal Charges re Lease and Licence .. .. .	62	7	0				
„ New Engine and Repairs to Narrow Boat .. .. .	155	0	0				
„ Mower and Roller .. .. .	162	10	0				
„ Public Conveniences .. .. .	400	0	0				
„ Surfacing Road .. .. .	500	0	0				
„ New Enclosures .. .. .	183	3	0				
„ Hut and Garage .. .. .	207	17	0				
„ Water Supply .. .. .	110	2	6				
„ Repairs to Headquarters' Cottage .. .. .	255	18	9				
	<u>£11,710</u>	<u>15</u>	<u>2</u>				
				Balance, being Excess of Expenditure over Income .. .. .		15	13 8
					<u>£11,710</u>	<u>15</u>	<u>2</u>

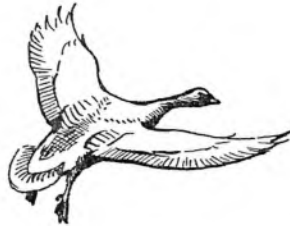
Severn Wildfowl Trust



### BALANCE SHEET—31st DECEMBER, 1950

Annual Report 1950-51

(Signed) S. J. DUDBRIDGE & SONS,  
Auditors.



### ANNUAL DINNER

After the Annual General Meeting a Dinner was held for Members and their guests at the Charing Cross Hotel. The following were present :

Miss C. M. Acland, R. F. Aickman, Mrs. R. F. Aickman, Field-Marshal Lord Alanbrooke, D. W. Allen and guest, G. Atkinson-Willes, J. S. Bain and guest, Miss J. S. Bayley and two guests, Guy Benson, Lady Violet Benson, Michael Bratby, Major F. E. Briscoe and guest, Mrs. J. Cahn, J. W. A. Calver and guest, Lt.-Gen. Sir Adrian Carton de Wiart, J. Christmas, J. C. Christopher-son and guest, J. W. Clayton and guest, Edwin Cohen, Mrs. E. Cohen, Miss J. Cohen, M. Thompson Coon, Mrs. M. Thompson Coon, J. Cox, Miss Crone, Capt. C. N. E. Currey, Mrs. C. N. E. Currey, Miss S. Sinclair Davidson, Miss R. Sinclair Davidson, J. C. Davis and guest, Dr. J. Y. Dent and guest, J. R. East, J. O. d'Eath, Humphrey Ellis, Dr. N. B. Farman and guest, James Fisher, R. S. Fitter, Miss E. Forster, G. B. Gooch and two guests, Frank Grant, Mrs. F. Grant, Miss R. M. Haines, H. K. Hallam, Mrs. H. K. Hallam, Mrs. ap Hodge, Kenneth Horne, Mrs. K. Horne, Dr. M. J. Ingram, Mrs. M. J. Ingram, T. Ingram, Sir Archibald Jamieson, Major D. Jamieson, J. A. J. Jamieson, E. Lloyd Johnstone, Miss Barbara Jones, Major Laurence Jones, Mr. Miller Jones, Mrs. Miller Jones, Terry Jones, J. F. Keeble, Mrs. Rait Kerr, Miss M. Kirke, E. N. Kitcat, Major M. Knight, Mrs. M. Knight, C. Vaughan Lee, Mrs. C. Vaughan Lee, Lt.-Col. G. Lomer, Mrs. G. Lomer, C. F. Lundvall, Major E. H. Lynn-Allen, Miss V. Maxse, Hon. Ewen Montagu, L. Hugh Newman, Mrs. L. H. Newman, E. M. Nicholson, W. K. Oliver, T. L. Outhwaite, Lord Geoffrey Percy, J. M. Reakes-Williams, Miss B. M. Robbins and guest, J. A. S. Russell, Duke of Rutland, E. A. Scholes, Peter Scott, K. Shackleton, L. Spinks, Mrs. L. Spinks, Miss M. Spinks, Brig. H. M. Stanford, Miss P. Talbot-Ponsonby, Miss J. Tate, Major Tapp, Mrs. Tapp, Miss P. Townsend and guest, Vice-Admiral J. W. A. Waller and guest, Mrs. W. Boyd Watt, B. T. Whinney, A. Whitlock, G. T. Wilkins, Mrs. G. T. Wilkins, C. de Worms, B. A. Young.

The Toast List was as follows:

H.M. The King.

Proposed by the President, Field-Marshal the Rt. Hon the Viscount Alanbrooke, K.G., G.C.B., O.M., D.S.O.

The Severn Wildfowl Trust.

Proposed by Humphrey Ellis, Esq.

Reply by the Hon. Ewen Montagu, O.B.E., K.C.

The Guests.

Proposed by Lt.-General Sir Adrian Carton de Wiart, V.C., K.B.E., C.B., C.M.G., D.S.O.

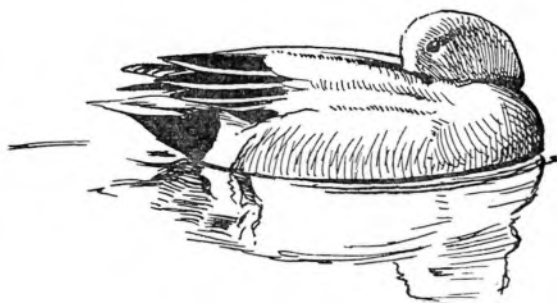
Reply by Kenneth Horne, Esq.

### OBITUARY

The Trust, in common with all British ornithology, suffered grievous loss in the death of B. W. Tucker, who had been a member of the Council since its very earliest days. Although illness had prevented his attendance at recent meetings his advice was of the greatest benefit to the Trust, and the support of so eminent an ornithologist gave great encouragement in the early and formative years.

The Council has also noted with deep regret the deaths (notified since the last issue of the Annual Report) of the following members:

Miss N. E. Batty	E. W. Hendy
Brigadier F. W. Bewsher C.B.E., D.S.O., M.C.	Miss K. M. Hughes
A. W. W. Brown	W. J. Jones
H. A. Calnan	G. G. Lydiard
G. Clinton Baker	J. M. Macmillan
Brigadier E. F. Davies, D.S.O., M.C.	R. Mason
His Grace the Duke of Devon- shire, K.G.	P. F. Mountcastle
Miss T. Fisher-Smith	Brigadier-General W. L. Osborn, C.B., C.M.G., D.S.O.
Mrs. A. Graham	George Bernard Shaw
D. G. Hancock	Mrs. Edgar Smith
Major W. Harker	R. E. Stuart
	Mrs. A. M. Vaughan-Hughes
	J. C. Wigham



## MEMBERSHIP

### Members

Annual subscription 1 guinea. Free access to pens and to observation huts. May bring one guest. One copy of Annual Report. Periodical Bulletins.

### Associates

Annual subscription 5s. Free access to pens and to observation huts. No copy of Report, but receive periodical Bulletins.

### Corporate Membership

Annual subscription (minimum 1 guinea) 1s. each up to 50 members of Corporate body, 9d. each up to 100, 6d. each above 100. For those under 16, 9d., 6d. and 4d. respectively. Free access to pens and to observation huts, but only in parties of not less than 10. Not before 2 p.m. on Sundays. One copy of Annual Report and periodical Bulletins for each Corporate body. (This membership is open only to Schools, Universities, Youth Clubs, and Teachers' Training Colleges.)

### Parish Members

Annual subscription 2s. 6d. Free access to pens only, but not on Sunday mornings. May bring a guest. Receive periodical Bulletins. (This membership is only open to those residing in the Parish of Slimbridge.)

### General Public

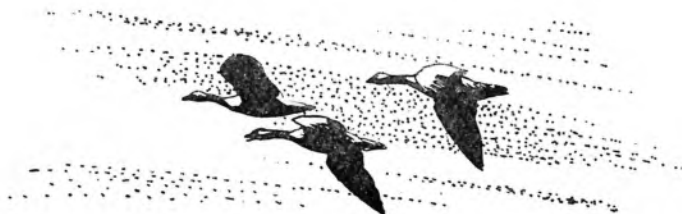
Admitted to the pens only, at 2s. (children under 16, 6d.), but not before 2 p.m. on Sundays. The enclosures are open from 9 a.m. till sundown every day of the week with the exception of Sunday mornings, which are reserved for Members only.

### Gift Membership Tokens

These can be purchased and given as Christmas or birthday presents. They make the recipient a Member of the Trust for a year with full facilities and a free copy of the Annual Report.

### Accommodation

Hostel accommodation is available at reasonable rates for visitors, whether Members or not, on board the converted canal boat, *Beatrice*, which lies a few hundred yards from the Headquarters.



## MEMBERS OF THE SEVERN WILDFOWL TRUST

**21st April, 1951**

We apologise for any errors which may appear in this list and shall be grateful if members will inform us so that our records can be corrected.

<b>HONORARY LIFE MEMBER</b>	Group Capt. R. Smyth-Pigott	Lady Allfrey
Her Royal Highness The Princess Elizabeth, Duchess of Edinburgh	Mrs. Carl Tucker	Major D. S. Allhusen
	Sir George Usher	Lt.-Col. R. C. Allhusen
	H. Whitbread	Miss J. Allison
	Capt. W. D. Wills	Mrs. A. T. Allott
		C. R. Allott
<b>LIFE MEMBERS</b>		I. D. Allpress
Field-Marshal Viscount Alanbrooke, K.G., G.C.B., O.M., D.S.O.	<b>MEMBERS</b>	K. P. Allpress
H.E. Ahmed Abboud Pasha	H.R.H. The Princess Royal	Miss T. Almack
Duke of Bedford	Mrs. A. H. Ackroyd	W. E. Almond
G. Benson	Miss C. M. Acland	J. K. Ambler
Lt.-Col. R. L. Benson, D.S.O., M.C., M.V.O.	E. P. Acton	Mrs. L. G. Ambler
J. H. Bevan, C.B., M.C.	Miss A. E. Adam	R. N. H. Ambler
Michael Bratby	A. M. Adam	J. G. Ambrose, O.B.E., M.C.
Miss V. M. Bury	Mrs. E. C. Adam	Sir Alan Anderson, G.B.E.
Miss D. A. Cadbury	Professor N. K. Adam	D. Anderson
H. G. Calkin	Mrs. N. K. Adam	G. F. Anderson
Major R. C. R. M. Clarke	P. G. Adam	Dr. R. G. Anderson
Lord Dulverton of Batsford, O.B.E.	A. W. Adams	W. A. Anderson
Lord Egerton of Tatton	Miss E. Adams	J. W. Anderton
G. Gibb	J. L. Adams, Jr.	F. E. Andrews
P. L. Gordon	W. C. Adams	Mrs. H. A. Andrews
Mrs. M. Greenslade	Dr. E. I. M. Addenbrooke	H. K. Andrews
G. P. Harben	Sir Michael Adeane, K.C.V.O.	J. Andrews
Sir Archibald Jamieson, K.B.E.	S. Adlard	P. Andrews
James Robertson Justice	Mrs. S. Adlard	R. W. Angus
J. A. Lister	N. M. Agnew	Miss C. Anson
Sir Percy Lister	R. F. Aickman	G. W. Anson
J. W. Livermore	Mrs. R. F. Aickman	Miss E. S. Anstice
S. L. Lloyd	C. J. Ainscough	R. J. W. Appleton
Mrs. J. M. Macmillan	Col. E. A. Airy	R. Appleyard
I. D. Malcolmson	Miss D. Albright	Miss M. Archer
Miss T. A. Miller	Lord Aldenham	T. Archer
Henry S. Morgan	Mrs M. Alder	Mrs. M. N. Argles
P. Murray	Miss D. M. Alderson	Mrs. N. B. Arkell
C. D. Norton	Mrs. J. R. Alderson	Miss W. Armer
Kerrison Preston	R. F. N. Aldrich-Blake	Miss E. Armitage
D. Robarts	Mrs. A. W. S. Aldridge	Dr. G. Armour
Peter Scott, M.B.E., D.S.C.	J. F. Alexander	Miss W. Armstead
Sir William Seeds, K.C.M.G.	Mrs. V. Alexander	H. J. Armstrong
Mrs. W. J. Short	W. B. Alexander	A. B. Arney
R. Simpson	Capt. W. Allan	Miss C. Arnold
Sir Keith Smith	Professor A. A. Allen	T. S. Arnold
W. Proctor Smith	D. W. Allen	G. Arthur
	Miss G. R. Allen	G. E. Arthurs
	Mrs. H. J. Allen	W. A. Ashby
	Lt.-Gen. Sir Charles Allfrey	Miss J. Ashmore
		Mrs. A. H. Ashwin
		P. Ashworth

- T. C. Askew  
 Mrs. J. B. Aspden  
 W. E. Astin  
 A. J. Aston  
 S. N. Aston  
 Hon. Michael Astor  
 A. Atkinson  
 Flt. Lt. D. W. Atkinson,  
     M.B.E.  
 Miss H. M. Atkinson  
 G. L. Atkinson-Willes  
 Mrs. N. Atteridge  
 Miss E. Attwell  
 Miss L. Auerback  
 Miss J. Aumonier  
 Capt. E. A. Aylmer, R.N.  
 Mrs. E. A. Aylmer  
 R. J. Ayshford-Sandford  
 Mrs. R. J. Ayshford-Sandford  
 R. M. Bache  
 Mrs. A. G. Bailey  
 A. J. M. Bailey  
 Lt.-Col. F. G. G. Bailey  
 F. G. Bailey  
 Miss W. E. Bailey  
 J. S. Bain  
 Mrs. M. E. Bainbridge  
 Canon H. W. Baines  
 Mrs N. E. Baines  
 J. F. Baines  
 H. M. B. Baird-Ferguson  
 F. A. Bak  
 Mrs. A. Baker  
 Miss B. M. Baker  
 G. F. Baker  
 Mrs. H. Baker  
 Miss K. E. Baker  
 L. Baker  
 Miss M. Baker  
 C. V. Balch  
 Mrs. L. M. Balch  
 J. M. Balcon  
 Sir Michael Balcon  
 Miss F. E. Baldwin  
 H. J. Baldwin  
 Miss S. Baldwin  
 A. N. Balfour  
 Mrs. G. Balfour  
 H. G. Balfour  
 L. Balfour  
 Miss E. Balfour-Browne  
 Mrs. M. Balme  
 F. Bancroft  
 Miss M. Banks  
 Michael Banks  
 C. Barbarin  
 Miss E. G. Barber  
 C. G. Barclay  
 Lt.-Col. F. P. Barclay  
 Mrs. T. M. Barclay  
 Miss Bargrave-Deane  
 D. G. W. Barham  
 E. B. Baring  
 Hon. Robin Baring  
 Dr. A. S. Barling  
 C. D. Barlow  
 Mrs. C. D. Barlow  
 D. D. Barlow  
 F. R. Barlow  
 Cmdr. T. E. Barlow, R.N.  
 Miss W. M. Barnard  
 R. D. J. Barnes  
 Mrs. E. Barnes  
 Miss R. M. Barnes  
 W. Barnes  
 Col. G. A. Barnett  
 Miss C. Barney  
 Air Chief Marshal Sir Arthur  
     Barratt, K.C.B., C.M.G.,  
     M.C.  
 G. A. Barratt  
 Capt. G. A. Barratt, R.N.  
 J. Barratt  
 J. H. Barrett  
 P. J. Barrett  
 F. J. F. Barrington  
 J. S. Barrington  
 Lt.-Col. R. C. Barrow  
 R. L. Barrow  
 Miss D. V. Barry  
 A. Barwell  
 B. R. Basset  
 R. L. Basset  
 J. Bastow  
 A. A. M. Batchelor  
 Mrs. A. A. M. Batchelor  
 Mrs. E. Bate  
 Hon. Mrs. B. L. Bathurst  
 Hon. Mrs. W. Bathurst  
 R. J. Batterbury  
 Mrs. E. M. Battie  
 T. J. Batty  
 W. R. Batty  
 Wing-Comdr. A. R. G. Bax  
 Miss G. O. Bax  
 H. L. Baxendale  
 Major W. L. Baxendale  
 G. V. Baxter  
 Miss S. E. Bayley  
 D. R. Baylis  
 Miss D. H. Beach  
 R. H. Beach  
 G. G. Beadle  
 Mrs. G. Beadle  
 D. O. Beale  
 Miss K. M. Beard  
 Lt. J. H. Beattie, R.N.  
 A. R. Beauchamp  
 Mrs. E. F. Beauchamp  
 Duke of Beaufort, K.G., P.C.,  
     G.C.V.O.  
 Duchess of Beaufort  
 Mrs. Beaufort-Clayton  
 Hon. Mrs. Beaumont-Nesbitt  
 Miss W. A. Beausire  
 Miss E. D. Beazley  
 Mrs. J. S. Becke  
 Miss E. L. Beckett  
 Dr. F. G. A. Beckett  
 H. Bedford  
 W. Bee  
 Miss D. H. de Beer  
 C. U. L. Behrend  
 A. Behrendt  
 Mrs. F. H. Bell  
 Miss M. Bell  
 Miss D. W. Bellhouse  
 G. W. F. Bellward  
 R. Belsey, M.S., F.R.C.S.  
 C. H. Benmore  
 A. E. Bennett  
 Brigadier C. V. Bennett  
 H. W. Bennett  
 Lt. J. H. C. Bennett  
 P. W. Bennett  
 R. A. Bennett  
 Air Commodore C. E. Benson,  
     C.B.E., D.S.O.  
 Miss G. Benson  
 G. B. Benson  
 J. H. Benson  
 Lt. N. R. Benson, R.N.  
 Lady Violet Benson  
 A. Bentham  
 Capt. R. G. W. Berkeley  
 F. W. W. Bernard  
 Dr. J. Berry  
 M. F. Berry  
 Mrs. K. Berry  
 W. G. Berry  
 A. A. Best  
 F. A. K. Betty  
 Major L. B. B. Beuttler,  
     M.B.E.  
 Mrs. P. R. Beuttler  
 D. M. E. Bevan  
 L. E. D. Bevan  
 Rear-Admiral Sir Richard  
     Bevan, C.B., D.S.O., M.V.O.  
 C. T. Beverley  
 Dr. J. A. B. Bickford  
 Dr. M. Bickmore  
 Mrs. C. Biddell  
 Miss C. Biddle  
 W. J. Biddle  
 A. Biddulph  
 Miss C. M. Biggs  
 T. H. A. Biggs  
 F. B. Bigland  
 D. L. Binder  
 Miss V. J. Binks  
 Miss E. Binyon  
 Lady Birchall  
 Mrs. S. P. Birchall  
 R. C. Bird  
 S. S. Birdsall

J. Birkett	Mrs. D. E. Bovet	Capt. Rt. Hon. Sir Basil
T. C. A. Birley	Miss C. E. Bowen	Brooke, Bart., P.C., C.B.E.,
Miss W. Birt	Miss M. Bowen	M.C.
Miss H. N. Biscoe	J. Bowlby	Lt.-Cmdr. H. J. A. Brooke,
Mrs. E. W. Bishop	Lady Bowlby	D.S.C., R.N.
Mrs. E. Bisset	Miss E. M. Bowles	O. Brooke
Mrs. G. T. Black	A. W. Boyd	R. H. Brooke
M. D. G. Black	Mrs. A. W. Boyd	J. B. Brooker
Miss P. Blackburn	H. J. Boyd	Miss F. C. Brookes
Dr. C. P. Blacker	L. L. Boyd	J. H. Brooks
A. F. S. Blackett	R. Boyd	Miss H. Brotherton
Col. C. J. Blaikie	Dr. T. Boyd	Major Hon. H. R. Broughton
C. B. Blake	W. Boydell	Miss A. Brown
G. G. Blake	Mrs. C. L. Boyle	Miss A. Brown
G. B. Blaker	D. Boyle	Miss B. E. Brown
Miss N. Bland	W. J. A. Boyle	Miss B. W. Brown
Mrs. L. Blandy	Viscount Boyne	Mrs. C. Brown
Rev. F. L. Blathwayt	C. Braby	C. H. A. Brown
Miss S. Blathwayt	A. G. Brackenbury	Miss D. Brown
Miss B. Bleckly	Miss J. Bradbury	D. H. W. Brown
Miss E. M. Blinman	Lt.-Col. J. M. A. Braddell	E. R. Brown
Miss N. Blizard	T. Brading	E. T. Brown
Lt.-Col. N. R. Blockley	Miss H. W. Bradley	G. Brown
Rev. G. V. Blois	Miss W. E. Bradley	G. E. Brown
Hon. Mrs. G. V. Blois	R. G. Bradshaw	J. J. G. Brown
Miss E. E. Bloodworth	W. R. B. Brash	Col. J. R. Brown
J. Blott	H. J. Bratby	Miss J. R. Brown
C. R. Blount	S. H. Bratby, M.B.E.	P. E. Brown
G. Blows	Mrs. M. Bratby	P. P. Brown
Mrs. B. S. Blundell	Mrs. B. Bray	S. Brown
J. K. Blundell	R. P. Bray	W. A. Brown
L. Blundell	Dr. M. K. Braybrooke	Mrs. W. S. A. Brown
Capt. H. S. Blunt	Air Vice-Marshal J. Breakey,	Dr. E. M. Browne
D. F. Blyth	C.B., D.F.C.	J. B. Browne
R. P. Blyth	Mrs. M. R. Brennan	Miss N. Browne
M. R. Boardman	W. G. Bretherton	Major W. B. E. Browne
G. S. Bocquet	Miss D. Brewer	Mrs. C. S. Browning
Dr. F. Bodman	Miss M. E. Bridge	Lt.-General Sir Frederick
A. E. V. Boggust	Col. Hon. Henry Bridgeman,	Browning, K.B.E., C.B.,
Mrs. H. E. Boggust	D.S.O.	D.S.O.
C. H. Bois	Miss M. H. Bridgeman	Lady Browning
Mrs. H. E. Bolden	D. V. Bridgeland	Lt.-Col. H. G. Brownlow
Miss E. Bolton	Dr. C. E. Brierley	Mrs. K. M. Brownlow
E. R. Bomford	Mrs. E. Briggs	Miss M. Bruce
Mrs. M. E. H. Bonar	Dr. E. M. Briggs	Miss M. E. Bruce
Capt. R. J. Bond	Miss E. M. Briggs	Miss R. H. Bruce
Mrs. E. Bonner	G. van den Brink	Miss M. Brummell
Miss A. Bonus	Dr. D. H. Brinton	Mrs. G. Bryant
S. S. Boorman	Miss E. M. Briscoe	Miss H. M. Bryant
B. D. McD. Booth	Major F. E. Briscoe, D.S.O.	Dr. N. Bryce
C. G. Booth	W. S. Brittan	Dr. R. G. Bryce
Dr. R. W. Booth	W. F. Britton	Mrs. R. G. Bryce
Major A. R. Bosanquet, M.C.	C. A. Brobyn	W. J. Brymer
H. Bostock	F. Brock	Lady Buchanan
Mrs. B. Boston	Miss M. M. Brock	D. H. Buchanan
W. H. Boston	Major J. M. Brockbank	A. Buckoke
Rev. Canon P. E. Boswell	Mrs. C. G. Brocklebank	M. Budgen
A. G. Bottomley	P. F. Le Brocq	W. R. Bufton
Capt. S. Boucher, C.B.E., R.N.	F. K. Bromley	Miss M. Bufton
Dr. D. Boulton	R. Bromley	R. P. Bufton
C. H. Boutflower	P. E. Bromley-Martin	F. W. Buglass
		A. Bull, O.B.E.

- Miss L. Bull  
 M. A. Bullen  
 Mrs. M. Buller  
 J. F. H. Bulman  
 B. Bulmer  
 H. H. Bulmer  
 P. S. Bulson  
 Mrs. G. M. Burge  
 Major H. Burgess  
 Mrs. B. O. Burke  
 Mrs. E. H. Burn  
 Miss P. Burnett  
 Dr. J. Burns  
 Cmdr. H. M. Burrows, R.N.  
 M. G. Burt  
 M. de L. Bush  
 Lt.-Col. E. P. Butler  
 E. W. Butler  
 Miss F. S. Butler  
 K. Butterfield  
 Miss M. H. Butterworth  
 Miss M. L. Butterworth  
 J. M. Buxton  
 M. Buxton  
 R. J. Buxton  
 Col. R. V. Buxton  
 E. Cadbury  
 Mrs. H. M. Cadbury  
 Mrs. L. A. Cadbury  
 Miss D. M. R. Cade  
 W. A. Cadman  
 C. T. Cain  
 Brigadier The Earl of Caithness, D.S.O.  
 S. G. Calcutt  
 M. A. Callender  
 Mrs. K. Calnan  
 J. W. A. Calver  
 Miss Phyllis Calvert  
 Miss P. Cameron  
 R. McL. Cameron  
 Miss U. L. Cameron  
 W. Camm  
 Dr. A. M. G. Campbell  
 Mrs. A. M. G. Campbell  
 Bruce Campbell  
 Miss C. Campbell  
 G. D. Campbell  
 H. A. Campbell  
 J. Campbell  
 C. Candler  
 Miss D. A. Cannell  
 G. Capper  
 W. C. O. Capper  
 P. G. Cardew  
 Miss M. C. Carew  
 I. F. Carlile  
 Miss B. M. Carlisle  
 D. G. Carmichael  
 D. G. O. Carmichael  
 G. Carmichael  
 Mrs. G. Carmichael  
 Mrs. H. E. Carnes  
 R. A. Carr  
 Mrs. H. G. C. Carr-Ellison  
 A. J. Carrington  
 J. F. Carson, O.B.E.  
 A. S. Carter  
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Major N. F. H. C. Norris	Miss E. Parker	Miss E. A. Peplow
Miss S. F. Norris	J. F. Parker, F.S.A.	W. A. Peplow
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Viscount Royston	W. E. Scott	Major The Master of Sinclair
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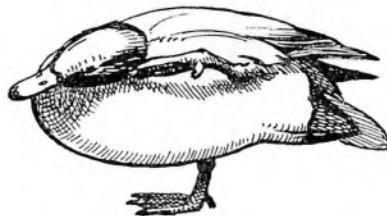
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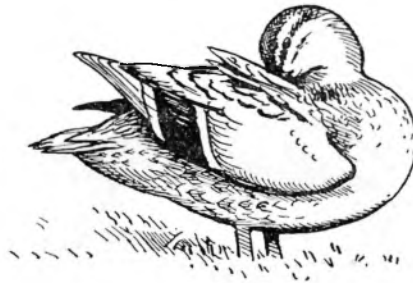
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Nesting Grey Lag

*Baron*





The Tack Piece in snow photographed from the hut in Rushy Pen. *P. Talbot-Ponsonby*

The House Pipe of the Decoy broken down by snow.

*P. Talbot-Ponsonby*







A catch of about thirty Mallards in the West Pipe.

*P. Talbot-Ponsonby*

Ringing an immature drake Pintail.

*P. Talbot-Ponsonby*







*M. Thompson-Coon*



*M. Thompson-Coon*

The rocket nets are previously furled onto large reels (top, left) so that they can be laid out quickly in the field. Below a net is being set and checked over in an oats stubble in Scotland to which the Pinkfeet will return later in the day. When laid the net is completely hidden with rakings of straw—a laborious procedure (top, right).

*P. Talbot-Ponsonby*







*P. Talbot-Ponsonby*

Concealing the net in a grass field is much harder than in stubble. The lip of a ditch (above) provides a slope on which the net will be hidden from geese walking up from the right. Here the net is being laid for Grey Lags in Scotland. Below is the trailer-hide usually stationed at the edge of the field 200-300 yards from the net. The wheels are hidden by the camouflaged apron. From this hide the rocket nets are fired by electricity.

*P. Talbot-Ponsonby*







*M. Thompson-Coon*

A catch of twenty-six Pinkfeet with two nets. Scotland, October 27, 1950.



*L. Devenish*

A catch of seventy-nine Pinkfeet and one Greenland Whitefront with four nets. Scotland, March 10, 1951.



*M. Thompson-Coon*

After a catch of thirty-eight Pinkfeet with one net. Scotland, October 15, 1950.





**Recapture of a Pinkfoot ringed  
a year earlier.**

*M. Thompson-Coon*



**Dyeing the tail of an immature  
Pinkfoot.**

*M. Thompson-Coon*

After a catch of fourteen Pinkfeet with two nets. Scotland, January 23, 1951.  
Note black bags over heads of geese to prevent additional tangling in nets, also  
dye-can and bucket.

*P. Tulbot-Ponsonby*







The Big Pen flooded. Greater Snow Geese—adult and immature.

*P. Talbot-Ponsonby*

The geese in the Big Pen by flashlight.  
Greater Snow, Grey Lag, Blue Snow, Barhead, Bean,  
Emperor, Swan Goose, Whitefront; also Mallard.

*"News Chronicle"*





Tame full-winged geese—three Grey Lags and a Bean.

*G. T. Wilkins*

The Rushy Pen in hard weather.

*P. Talbot-Ponsonby*







Full-winged cob Whooper Swan threatening.

*"Sunday Mercury"*

A pair of Coscoroba Swans from Argentina.

*P. Talbot-Ponsonby*







*P. Glasier*

Six White-faced Whistling Ducks from South America and Africa, and two Eyton's Whistling Ducks from Australia.

Ne-ne or Hawaiian Goose sitting on nest. The eggs were infertile, probably because the new gander arrived in full moult.

*P. Glasier*







*A. M. Adam*

Southern Red-billed Whistling Duck from South America. A number of these birds are full-winged and may be seen flying round the New Grounds.





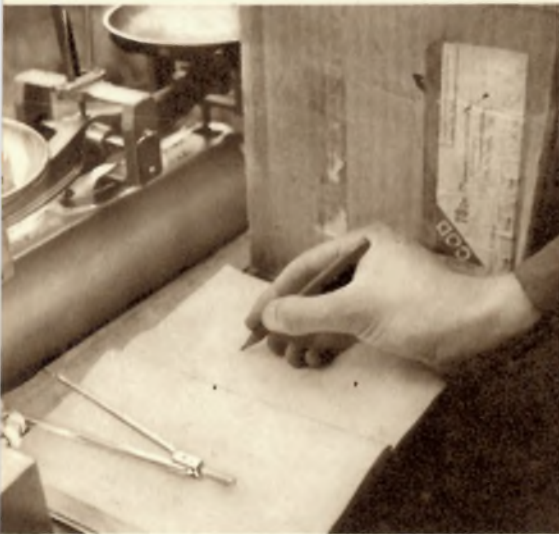
*P. Talbot-Ponsonby*

Southern Red-billed Whistling ducklings, the first of this race, it appears, to be successfully reared in Europe.

*P. Talbot-Ponsonby*







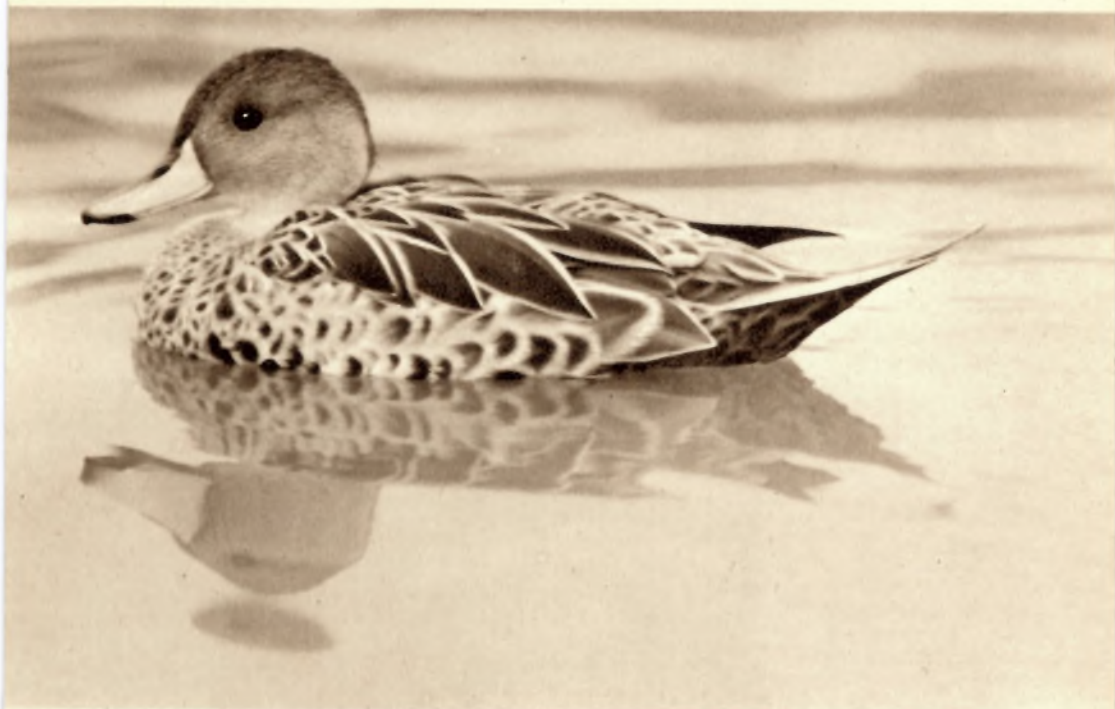
Studying the development of Mallard ducklings. Here they are being weighed and measured by Hugh Boyd, resident biologist, and their temperatures are being taken.

Erica



Chiloe Wigeon drake from South America.

*D. F. McKinney*



Chilean Pintail drake from South America.

*D. F. McKinney*





*P. Glasier*

Above, Radjah Shelduck from northern and eastern tropical Australia. Surprisingly enough these birds appear to be perfectly hardy in Britain. Unfortunately only two females are included in the collection. The introduction of fresh blood from Australia into the very small breeding stock in this country is urgently needed. Below, Female Ring-necked Duck from North America. This is sometimes held to be the New World representative of the Tufted Duck. Unfortunately, the Trust has only two females of this species, too, although mates for them are to be supplied shortly from the Delta Waterfowl Research Station, Manitoba, Canada.

*P. Glasier*





A. M. Adam

Above, Tufted duck, a British bird. A wild duck of this species spent the winter in the Rushy Pen. He was caught and ringed but has remained, and is still present at the time of writing.

Below, Southern Pochard duck. This beautiful coppery-brown species comes from South Africa and also South America. It has lately been shown that the populations are distinguishable. This duck is from the Cape and belongs to the race *Netta erythrophthalma brunnea*, but specimens have recently arrived from Brazil belonging to the typical race *Netta erythrophthalma erythrophthalma*.

P. Glasier







*A. M. Adam*

Mandarin Ducks—native of China, have now become established as wild birds in several parts of Southern England and probably merit inclusion in the British List. It is proposed to rear full-winged Mandarins at the New Grounds.

*A. M. Adam*





*D. F. McKinney*

Drake Carolina or Wood Duck, from North America—a New World relation of the Mandarin Duck, which was recently threatened with extermination, but which has been saved by vigorous conservation. Although the Wood Duck breeds more satisfactorily in captivity than the Mandarin it has never established itself in the wild state in Britain. Many are full winged at the New Grounds.





*P. Talbot-Ponsonby*

Barrow's Goldeneyes—from Iceland, Greenland, Labrador and the Rocky Mountains. Above, two drakes are displaying, throwing up a small jet of water with their feet. Below, a female scratches her ear.

*P. Glasier*







*P. Glasier*

Red-breasted Mergansers, a British species which also occurs throughout Europe, Asia and North America. Below are four which were reared at the New Grounds in 1949 from eggs sent from Iceland, and above is one of the drakes in full plumage.

*N. Tinbergen*





*P. Glasier*

Drake Goosander—Europe. Above, the bird is in full plumage; below is the same bird in eclipse plumage. He was taken, as an adult, in the outflow of Walton Reservoir, near London, during the hard weather in March 1947, and has been at the New Grounds ever since. At present he is paired to a Red-breasted Merganser which lays eggs each year. These eggs have so far always been infertile. A mate of his own species is greatly needed.

*D. F. McKinney*







*A. M. Adam*

Above, a male Ruddy Duck displays in full chestnut breeding plumage. The head feathers are raised; the tail is kept closed (not spread as is shown erroneously in most illustrations). The brilliant blue bill is bounced on the breast, producing a fringe of bubbles at the waterline and the performance is accompanied by a soft belching sound. Below, two pairs of Ruddy Ducks are in grey winter plumage when only the male's white cheeks remain to distinguish the sexes. The blue bills of the males turn black. Ruddy Ducks breed well at the New Grounds. In the background is a Falcated drake.

*P. Talbot-Ponsonby*





*Erica*

Goslings of the Swan Goose (above) and of the Lesser Whitefront (below). Note the prominent eyelid, already characteristic of the species even at this early age.

*D. F. McKinney*





# THE SWANS, GEESE AND DUCKS

## of the British Isles

BY PETER SCOTT

### Part Two

The Third Annual Report contained Part One—Swans and Geese. In this Report the Egyptian Goose, Shelducks and Dabbling Ducks are dealt with ; it is hoped in subsequent Annual Reports to complete the series of British *Anatidæ*.

In presenting the short life histories the author wishes to acknowledge the following sources of information : *Handbook of British Birds* ; Witherby, Ticehurst and Tucker, 1939. *Geese of Europe and Asia* ; S. Alpheraky, 1905. *Check List of Birds of the World* ; J. L. Peters, 1931.

The four original oil paintings (30 in. × 20 in.) which have been reproduced in *The Swans, Geese and Ducks of the British Isles* were specially painted for the Trust by the Director. They have been presented and are for sale in aid of the Trust's funds. Applications should be made to the Assistant Secretary.



# THE SWANS, GEESE AND DUCKS

## of the British Isles

### PLATE V. (SHELDUCKS)

#### EGYPTIAN GOOSE *Alopochen ægyptiacus* (Brisson)

[No subspecies.] Breeds throughout Africa, excepting the arid regions, and in southern Palestine. Non-migratory, numerous records of occurrences in Europe, including British Isles, doubtless due mainly to escapes from captivity, but some evidence for sporadic influxes of wild birds (as in Ruddy Shelduck). Kept commonly in captivity in England since 18th century. Long found in a feral state in several parts of the country, so that case for admission as 'British bird' comparable to that of Canada Goose.

Nests in trees, often in old nests of other species, but many other sites recorded. Nest built of twigs, lined with grass. 5-8 eggs, late March-May in England. Incubation 28-30 days. Breeds freely in captivity, but very quarrelsome with other species.

Food : principally grasses, but variety of other vegetables and animal foods taken.

Voice : harsh frequently repeated bark. Male in display has curious rasping puffing call.

Identification : plumage pattern highly distinctive. Prominent chocolate patches round eye and in centre of lower breast. White wing-coverts, black primaries and metallic green secondaries produce striking and characteristic appearance in flight.

#### RUDDY SHELDUCK *Tadorna ferruginea* (Pall.)

[No subspecies.] Breeds from South-eastern Europe and central Asia east to Manchuria and China and south to Tibet, Iran and rarely to Algeria and Morocco.

Nests in holes in wide variety of situations. 8-12 eggs (16 recorded) late May. Incubation 27-29 days. Breeds freely in captivity.

Winters N. African coast, S. Arabia, India, Ceylon, east to Japan, S. China and Formosa. Has occurred casually in eastern U.S.A., in W. Greenland, Iceland, almost all European countries, and Japan. Recorded from many

parts of Great Britain and Ireland, usually singly, but very occasionally in small flocks, mainly late summer, but impossible in most instances to distinguish between wild birds and those escaped from captivity.

Food : mainly vegetable, of many kinds, but also small fish, amphibia, worms, snails and crustaceans. Typically seen grazing in steppe country in large flocks.

Voice : loud moaning call : 'kow' or 't-t-taaw'.

Identification : general orange-brown coloration with pale buff or white head (considerable individual and seasonal variations in intensity), black flight-feathers and tail, wings strikingly black and white in flight.

#### COMMON SHELDUCK *Tadorna tadorna* (L.)

[No subspecies.] Breeds on coasts of western Europe from northern Norway to Normandy, and locally about the shores of the Mediterranean, Black and Caspian Seas, in areas of mud-flats; also on saline lakes of central Asia to E. Siberia, Mongolia and Tibet. Nests chiefly in burrows, but also under hay-stacks and bramble bushes, in stone walls and occasionally hollow trees. 7-12 eggs (up to 20 recorded), late April to end of May in Britain. Incubation 28 (usually)-30 days. Breeds (but not very freely) in captivity.

Movements outside breeding-season not yet well understood. Occurs in winter over most of breeding range except extreme north, and also farther south, to Egypt, Palestine, N. India, Burma, S. China and Formosa. Adults of Western European breeding population undertake moult-migration in July, assembling in a very few areas (notably the Heligoland Bight, and the Bristol Channel), and returning very gradually through the winter to their breeding-haunts. Probably majority of, but not all, British birds go to Heligoland.

Food : principally molluscs and crustaceans, also insects, fish, annelids, and some vegetable matter (algæ, grasses and aquatic plants).

Voice : female, a loud laughing note in falling cadence. Male in display a high whistle.

Identification : black, white and chestnut plumage and red bill of adults unmistakable ; juveniles are dark grey-brown above, lack chestnut band and bright bills.



COMMON  
SHELDUCK



Immature



RUDDY  
SHELDUCK

EGYPTIAN  
GOOSE



Peter Scott  
1951





## PLATE VI. (DABBLING DUCKS)

### PINTAIL *Anas acuta acuta* (L.)

[American Pintail has been described as *Anas acuta tzitzihua* Vieillot, but race is of doubtful validity.] Breeds in northern parts of Europe, Asia and North America, including British Isles, where increasing as breeding species.

Nests, often socially, on islands in lakes or in cover on shores of lakes (not necessarily close to water). 7-9 eggs (6-12 recorded), early May to end of June in Scotland. Incubation 23-25 days. Breeds freely in captivity.

Winters south, northern Africa, Persian Gulf, India, Ceylon, Burma and southern China. More numerous in Britain in winter than in breeding season. Pintails ringed in Britain have been recovered in Iceland and N. Russia, also most other countries of N. and W. Europe. Occurs mainly on coast and estuaries; frequent on inland waters but usually only in small numbers.

Food: chiefly vegetable, especially plants of brackish water. Animal food includes insects, molluscs, earthworms and amphibians.

Voice: drake, a low double whistle: 'prhew'; about a fifth lower than Teal. Female quacks rather like mallard but thinner.

Identification: long, slender neck, very distinctive; drake mainly grey with dark head and neck, white breast, tail long and pointed, predominantly bronze-green speculum; grey-blue bill. Female, mallard-like, but of slighter build, grey bill, and generally paler plumage with bold crescent-shaped markings on flanks.

### EUROPEAN GREEN-WINGED TEAL *Anas crecca crecca* (L.)

[Green-winged Teal *A. c. carolinensis* replaces *A. c. crecca* in North America, while a form found in the Aleutian Islands has been separated as *A. c. nimia*.]

Breeds in Europe and Asia from Iceland to China. Widely distributed as breeding bird in Britain, sparsely in southern England, most numerous in Scotland. Nests on the ground in moors and marshes, often well away from water. 8-11 eggs (7-16 recorded), late April to early June. Incubation 21-22 days. Breeds infrequently in captivity.

Winters south to North Africa, Nile Valley, Somaliland, Persia, India and Ceylon, Assam, southern China and the Philippines. Fairly regular on Atlantic coast of North America. Recoveries of ringed birds show that British breeding Teal are largely resident and are reinforced by large-scale immigration of birds from Scandinavia and Baltic states, many on passage to Ireland and France.

Food: largely vegetable, mostly aquatic plants. Animal food includes wide variety of invertebrates.

Voice: male, high double whistle: 'prhew'; about a fifth higher than Pintail. Female, like high pitched mallard, first quack loudest, tails off more quickly.

Identification: small size distinguishes from other British ducks except Garganey and Green-winged Teal; prominent horizontal white line above wings in male; speculum of both sexes green and black, with broad white or buffish-white anterior bar and very narrow posterior one in drake. Female indistinguishable from Green-winged Teal.

**AMERICAN GREEN-WINGED TEAL** *Anas crecca carolinensis* (Gm.)

[Subspecies see above.] Breeds in northern North America from Alaska to Hudson Bay, south to central California, northern Nebraska, southern Minnesota and rarely to Gulf of St. Lawrence. 10–12 eggs (6–18 recorded), second half of May and early June. Incubation 21–23 days. Breeds more freely than European Teal in captivity.

Winters from southern British Columbia, Arizona, New Mexico, Arkansas and Chesapeake Bay, South to British Honduras, the Gulf coast and the lesser Antilles. Casual in Greenland, Bermuda, Hawaii and Japan. About eight British records (none elsewhere in Europe) but may occur unrecognised comparatively frequently.

Food : about 90 per cent. vegetable, mainly seeds of sedges and pondweeds; also insects and molluscs (rotting salmon recorded).

Voice : indistinguishable from European Teal.

Identification : drake very similar to Teal, but with conspicuous vertical white mark on sides of breast and no horizontal white bar on the scapulars; white or buff 'spectacle marks' on sides of head much less intense; drake in eclipse and duck in all plumages not distinguishable from Teal in the field.

**MALLARD** *Anas platyrhynchos platyrhynchos* (L.)

[*A. p. conboschas* replaces typical form in Greenland. *A. p. subboschas* from Iceland is probably not a valid race. Three endemic and sedentary ducks from islands in the Pacific are possibly conspecific : *A. p. wyvilliana* (Hawaiian Islands), *A. p. laysanensis* (Laysan Island), *A. p. oustaleti* (Guam, Saipan and Tinian).] Breeds in Europe and Asia from Arctic Circle south to the Mediterranean, Persia, Tibet, central China, Korea and northern Japan; Iceland; the Azores; northern and central North America; west of Hudson Bay and the Mississippi. Commonest breeding duck in Britain. Nests in fairly thick cover on ground, also holes in trees. 10–12 eggs (7–16 recorded; and fewer in re-nesting), usually in March or early April. Incubation 26–28 days, but unusually variable and 22 recorded. Breeds very freely in captivity and long domesticated; frequency of abnormally-plumaged birds in the wild indicates considerable admixture of domestic stock in wild population.

Winters from southern half of breeding range to North Africa, Nile Valley, India, Burma, southern China, Japan, southern Mexico and Florida. British birds largely resident and sedentary; joined in winter by birds from Iceland, Scandinavia, Baltic countries and Holland, some on passage to N. France.

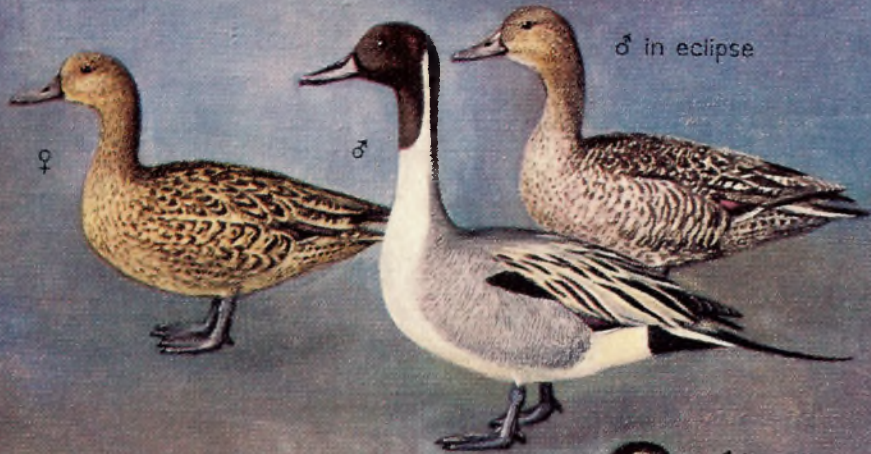
Food : mainly vegetable, of great variety, including grain from stubble fields in autumn. Animal food also varied, chiefly insects and molluscs.

Voice : female, loud and characteristic quack in falling diminuendo : 'kaaak-kaak-kak-kek-kek'. Male, low single quack, also, in display, a grunting whistle.

Identification : appearance of both sexes familiar, from domesticated birds, which are, however, larger; violet-purple speculum bordered by black and white bands on both sides is diagnostic in all plumages.



PINTAIL



♂ in eclipse

AMERICAN GREEN-WINGED  
TEAL



♂



♂

♂ in eclipse



EUROPEAN  
GREEN-WINGED  
TEAL

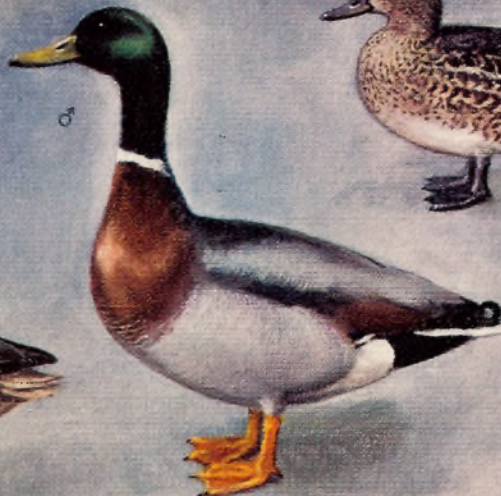


♀

MALLARD

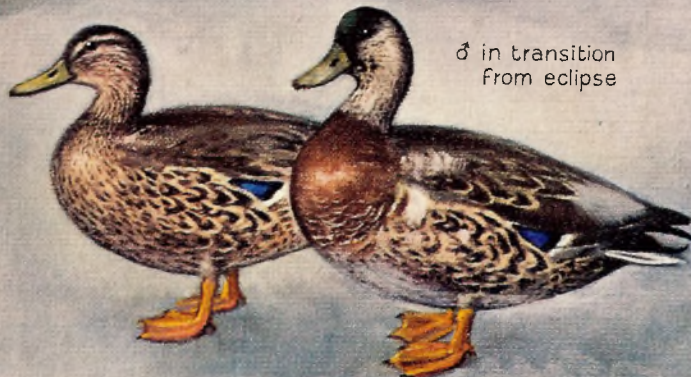


♀



♂

♂ in full eclipse



♂ in transition  
from eclipse

Food : almost entirely vegetable, principally grasses and *Zostera*, though many aquatic plants recorded. Was much affected by failure of *Zostera* during early 1930's. Grazes commonly in meadows in large packs by day, although it feeds mainly by night.

Voice : male, a loud double whistle : 'whee-uw'. Female, a stuttering rasping purr : 'ch-churr'.

Identification : medium size duck with short neck and small, short, blue-grey bill; adult drakes show white patch on wing-coverts, especially noticeable in flight, but juveniles lack this feature and resemble females; speculum black and green, white belly of both sexes apparent on the wing. For differences from American Wigeon, see under that species.

#### AMERICAN WIGEON *Anas americana* (Gm.)

[No subspecies.] Breeds in northern North America from Yukon and Mackenzie valleys east to Hudson Bay and south to eastern Oregon, northern Utah and South Dakota. 9-11 eggs (6-13 recorded), June. Incubation 22-25 days. Does not breed very freely in captivity.

Winters from British Columbia, the central Mississippi Valley and Maryland, south to Costa Rica, rarely to Panama, Colombia, West Indies, Greenland, Aleutian, Commander and Hawaiian Islands, Japan and Azores. About twelve British records, but some may be due to escapes. Probably occurs more frequently and is unidentified, especially as female so similar to European species.

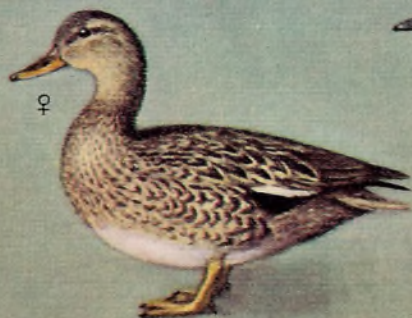
Food : largely vegetable matter, principally pondweed, also grasses and other aquatic plants. Animal food mainly snails.

Voice : similar to European Wigeon but male cannot produce clear sweet whistle, only a stuttering attempt.

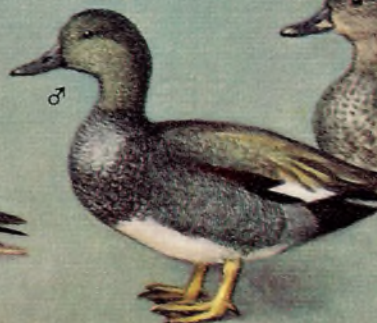
Identification : size and shape as Wigeon; drake is pale pinkish brown with grey speckled head and white crown, whereas European bird is grey with reddish-brown head and buff crown; glossy green on head only visible in good light ; duck only distinguishable from Wigeon under very favourable conditions, by more spotted head and darker patch behind eye.



GADWALL



♀



♂



♂ in eclipse

AMERICAN  
WIGEON



♂



♀

♂ in eclipse

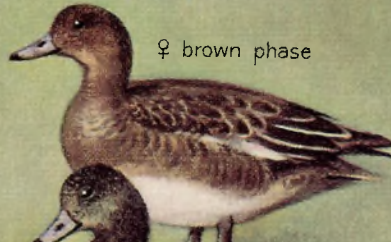


♂ in eclipse

Adult ♂



EUROPEAN  
WIGEON



♀ brown phase



♀ grey phase



♂ First winter

Voice : male, scolding chatter : 'krrrp-kr-kr-krrrp'. Female, teal-like quack, seldom heard.

Identification : size as Garganey; head of drake dark slate-grey with white crescent in front of eye; most distinctive feature in all plumages, light-blue fore-wing (not blue-grey as in Garganey), nearly as conspicuous in duck as in drake, but often completely hidden when at rest.

### SHOVELER *Anas clypeata* (L.)

[No subspecies.] Widespread as breeding species in Europe, Asia and North America, usually not north of Arctic Circle and not in eastern half of Canada. Now common and increasing in British Isles. Nests in meadows near water, favouring more open sites than most ducks. 8-12 eggs (7-14 recorded), April and May. Incubation 22-24 days. Breeds readily in captivity.

Winters from southern parts of breeding range south to North and East Africa, Persian Gulf, India, Ceylon, Burma, southern China, Japan, Hawaii, Lower California, Mexico, Honduras, Florida. British breeding birds are mainly summer residents. Breeding places of passage migrants and winter visitors not yet well established, apparently include Holland and N. Germany.

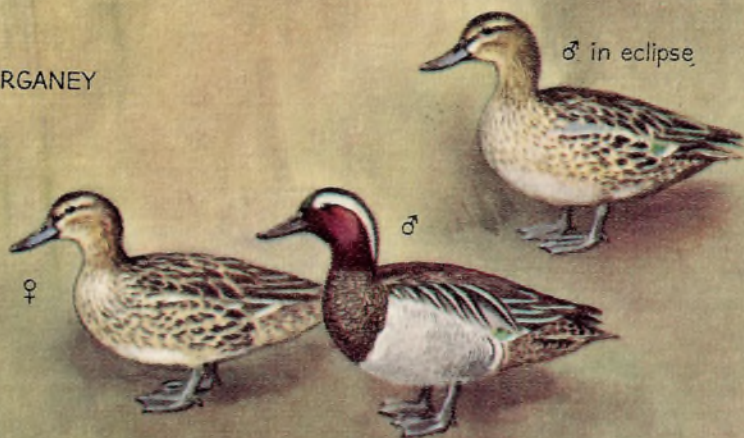
Food : no satisfactory studies of British birds, but American data indicate an unusually high proportion of animal food (34 per cent.), especially molluscs, but also crustaceans, insects, worms, tadpoles and frog spawn. Vegetable matter, buds, stems and seeds of many aquatic plants.

Voice : male, double clucking note : 'hnuk-hnuk'. Female, low quack, rarely heard. Wings make curious drumming rattle when bird rises, quite unlike any other duck.

Identification : large spoon-shaped bill diagnostic at all ages and seasons; breeding plumage of drake also distinctive; in flight pale-blue fore-wing noticeable, especially in drake, speculum green, bordered white in front and narrowly behind.



GARGANEY



SHOVELER



Peter Scott  
1951

